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ABSTRACT

This conference proceedings presents abstracts, complete papers, and author biographies for the 1993 Computer Assisted Language Instruction Consortium (CALICO) annual symposium on assessment in computer-assisted language learning (CALL); specifically a self-examination of the computer in language instruction, including a special presentation on Intelligent Computer Assisted Instruction (ICAI). Papers concerned software applications, language differences and similarities, and general computer-assisted language learning (CALL). A Preconference Workshop concentrated on testing, and several papers focused on particular languages. (Contains numerous references.) (NAV)

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CALICO '93
ANNUAL SYMPOSIUM

MARCH 8-13, 1993 The College Of WILLIAM&MARY

PROCEEDINGS OF THE
COMPUTER ASSISTED LEARNING AND INSTRUCTION CONSORTIUM
1993 ANNUAL SYMPOSIUM ON
"ASSESSMENT"

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ELEANOR M. T. JOHNSON
CALICO

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INTRODUCTORY REMARKS

FROM THE EXECUTIVE DIRECTOR

The United States, even broadly and inclusively envisioned, has a real problem with modern languages. By contrast to most (but not all) of its major trading partners it is provincially, even defiantly, mono-lingual. Many influential individuals and institutions are growing more than concerned, they are growing alarmed at this debility and the incalculable cost it is incurring in global economic and political relations. The U.S. Congress itself has committed considerable national resources toward doing something about it. Will this alarm make any appreciable difference in the country's fundamental attitude toward foreign languages? Recent history does not hold out much hope. There are still far too many instances in which the first sign of budget restraint means cancelling music, art, and language programs as somehow frivolous or less central than other activities. To add insult to injury, the cancellation of such programs is all too often accompanied by some such lunatic rationalization as "after two years of Spanish, my child is not yet fluent -- therefore the language teaching profession is not doing its job." Never mind that those two years may represent 160 contact hours or less. Even small children, those best of language students, don't learn their mother tongue in 160 contact hours!

Sometimes, responsible people, otherwise thoughtful and rational, feel free to blame the language teaching profession for failures which may be their own and not their teachers'. The underlying problems form a tender, highly sensitive, and potentially very painful tissue of sociological and psychological questions most people are too afraid or too polite to ask. Too often, the very disciplines which should be addressing these questions seem to be those most reckless in their attacks on language teaching. One wonder whether, daunted or dispirited by the Augean stables of their own disciplines, they don't simply find it easier to criticize than to study the disciplines of others.

The kinds of censure descending on language teaching can generally be distributed into the broad categories: self-criticism and "standards." The idea that the language teaching profession lacks self-criticism departs so far from the facts of the case, that if people balanced their checkbooks with similar disregard for reality, they would all end up in jail. The countless journals of the countless language societies, local, regional, and national, are filled with tips on how to do this better, how to liven that up, how to be properly communicative, etc., etc. The convulsive changes in methodology, from the notorious ALM (Audio-lingual method) over "structural approaches" (bringing Chomsky down to the language classroom), to TPR (total physical response) and "natural," "communicative," and "proficiency-based" methodologies do not speak of a smug, self-contained, and self-satisfied modern language teaching profession. This is a profession in earnest self-criticism, in persistent review of what it is doing, not because others are watching (the others who may be watching have not inclined to be particularly helpful), but because of an acute awareness of how difficult it is to teach (and learn) language successfully in the environments most of the profession is provided.

As to "standards," they were practically invented by the language teaching profession better than ten years ago. The impetus was provided by government. Government had and has a need for access to a reliable metric. The variety of tasks government language specialists -- "linguists" in government parlance -- have to accomplish in foreign service, in national security, in the military are not satisfied by the traditional A+ to F. Academically trained linguists carved out these standards. The standards themselves are subject to constant criticism and review. They are, furthermore, persistently reconsidered in the interaction between academic language education and public- and private-sector language training.

If testing is to standards, what theory is to practice, then the practice of standards is no less intensively pursued by the language teaching profession. There are whole journals and monographs dedicated to nothing else (see *CALICO Journal*, 9 [Spring 1992] 71-93 for dozens of examples).

To bring this inclusive focus more exclusively to the work of this society, the same array of criticisms and responses apply specifically to CALL. There is, however, an added complication. Other-than-rational attitudes toward foreign language only get compounded by other-than-rational attitudes toward technology. The two together invite postures so ridiculous, that the CALL practitioner may legitimately question whether they and the skeptics live in the same time and place.

The beginnings of the personal computer era of CALL coincided with the thought provoking, though in its time only implicit, Underwood-Pusack debate (John H. Underwood, *Linguistics, Computers, and the Language Teacher: a Communicative Approach*, Rowley, Mass.: Newbury House Publishers, 1984; James P. Pusack, *Using Computers in Teaching Foreign Languages*, Orlando, Fla.: Harcourt, Brace, Jovanovich, 1984, with Geoffrey Hope, Heimy Taylor), completely in the spirit of self-criticism. The same spirit has informed the development of CALL ever since. Far from making extravagant claims for the effectiveness of CALL, the entire tenor of CALL practice has been to stress the "A" in CALL: **Assistance**. And the real experience of CALL, where it is actually employed, is universally: 1) that any CALL is better than none, and 2) that CALL, once introduced, is perceived as indispensable. In the experience of the present writer, the culture of college students inclines to make them reluctant to praise electronic courseware in and of itself. They perceive the question as asking them to praise homework. But remove CALL from the menu of learning resources, and you will find some very disgruntled students.

The summons to contrastive studies has been heard. The journals are full of them, including the *CALICO Journal*. The results, given the small numbers of students involved, are usually statistically inconclusive, though not always. When inconclusive, the studies prove that the variables and imponderables in new language acquisition are beyond measure -- which common sense and experience tell any language teaching professional to begin with. When statistically suggestive, the studies routinely indicate that CALL helps -- which, again, common sense and experience tell any language teaching professional to begin with. Most language teaching professionals are not trained in statistical methodology. Why should they be? Let those who are not satisfied with the profession's earnest attempts at contrastive analysis, if they have sincere interest in the outcome and themselves command the methodology they seem to miss among the language teachers, undertake the studies themselves.

Nonetheless, the CALL profession, in the spirit of persistent self-criticism, never lets up in examining its own presuppositions and practice. This very Symposium was organized as an instance of self-examination. One preconference workshop is especially dedicated to testing (Noijons) and a battery of regular conference presentations attends to similar questions (Chapelle; Lowe, Janczewski, Smith & Larson; Hellebrandt & Russell; Johnson; van Bodegom). A number of presentations deal with CALL evaluation across the spectrum (Bradin & Siskin, Cooks & Henstock; Garrett; Lett; Liou; Liu & Chan; Mydlarski & Paramskas; Riguet; Rosenblatt; Slaton; Stock; Taylor; Tetrault & Meyer; Thibeault). Several presentations put particular languages in the focus: English

(Tammelin), French (Borrás; Fidelman; Fischer), German (Chun), Japanese (Evans & Levin; Hatasi, Fukada, Kanou & Yamamoto), Spanish (Champion). Concordance Linguistics (Bush; Meskill & Swan) and Speech Act Theory (Decoo) are being summoned to the task of assessment. Individual presentations (Holland; Sinyor) and a panel (Paramskas) take a hard, critical look at Intelligent Computer Assisted Instruction (ICAI). CALL practitioners are usually too busy leading, or just trying to keep up with, developments in technology and pedagogy. They have little time to reflect on their own history. One European CALL practitioner (Conoscenti), looking to the basic philosophical underpinnings of CALL, suggests that proper "assessment" awaits first the writing of a serious and comprehensive history of the field. Now, that is a challenge worth taking up.

CALICO '93 Assessment declares an end to the open season on language teaching professionals and CALL. No more sniping without a license.

Frank L. Borchardt

Frank L. Borchardt,
Executive Director,CALICO

CULTURAL APPLICATIONS IN MULTI-MEDIA

EDNA AMIR-COFFIN

ABSTRACT

The multi-media environment is a powerful combination of computer-driven media for the presentation and exploration of cultural materials in their target language. The pedagogical design of these materials combine text, video segments from a variety of sources, several audio tracks, and digitized images and sounds, to build a rich context for authentic texts. Examples will be brought from two hypermedia applications: 1.) A selection based on materials from the Buried Mirror, narrated by Carlose Fuentes; and 2.) Talking Poetry, a living anthology of Modern Hebrew Poetry. Historical narratives, film documentaries, literary texts, oral rendition of poetry, folk and classical music, and art works, are added to the original video text to enhance and enrich the application and add information to it.

PRESENTER'S BIODATA

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STATE-OF-THE-ART LANGUAGE LEARNING WITH SONY

JOHN BALMFORTH AND MARK HART

Sony Corporation is recognized worldwide as a leader in electronic and audio-video technologies. Sony Education Systems Division, a specialized unit of Sony Corporation, is committed to empowering educators with the creativity and technology solutions of Sony for improved productivity and quality of learning. Come see and hear how applications of Sony Learning systems and products can meet your institution's requirements.

Mark Hart of Sony Corporation of America will be presenting Sony's line of personal information products. These products include CD-ROM Data Discman, CD-ROM XA Multimedia Players, and CD-I Multimedia Disc Players. These products blend computers with video and audio in a highly interactive manner. Benefits for educators include portability, convenience, and massive data storage with write-once and rewritable optical technology.

John Balmforth of Sony Education Systems Division will be presenting Sony's newest, state-of-the-art language learning system which features magneto optical disc technology. This technology gives educators huge storage capacity with true random access. One 3.5 disc stores up to 4 hours of audio. This system also features multi channel audio capabilities and facilitates a highly interactive learning process to develop between the teacher and all levels of students. Sony Learning Systems are easy to use and create a fun and exciting learning environment.

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FINE-TUNING MACINTOSH FONTS WITH RESEDIT 2 AND FONTOGRAPHER 3.5

DONALD A. BECKER

The number of foreign character sets available to Apple Macintosh users as shareware and commercial software has grown steadily over the years. Consequently, there remain very few of the world's writing systems for which Macintosh users cannot readily obtain a bitmap, Postscript, or TrueType font. While the majority of these ready-to-use fonts are adequate for most non-technical applications, anyone actively engaged in the production of pedagogical or scholarly materials requiring a foreign character set will know only too well the frustration that comes from having to accept another person's whims about the best keyboard layout for a given writing system, another person's aesthetic judgments about the proper appearance of the foreign characters and their spatial relation on the printed page, and another person's perceptions of which diacritic marks and special symbols should be included in a particular font. Yet it is still unusual for a dissatisfied font user to take the bull by the horns and customize a deficient font to meet his or her aesthetic and practical requirements, even though powerful and easy-to-use software is available to enable him or her to do just that. My presentation will focus primarily on the use of two such programs: ResEdit 2 and Fontographer 3.5. "Case studies" involving German (including Fraktur and Suetterlin handwriting), Russian, Spanish, Greek, Icelandic and other languages will illustrate how these programs can be used to bring about a variety of improvements in one's arsenal of fonts.

Many fonts can be made more ergonomic by (a) minimizing the role of modifier keys in accessing special symbols and (b) reducing the need to move one's hand from the keyboard to the mouse in order to select a different font from a pull-down menu. Goal (a) can be achieved by devising, with the aid of ResEdit 2, keyboards on which special characters can be accessed without pressing the shift or option key, while goal (b) can be reached either by packing two frequently combined character sets into a single font in such a way that the caps lock key can be used to toggle between them or, in the case of larger character sets, by using the StyleMerger program provided with Fontographer 3.5 to designate one font as, say, the "bold" version of another so that it can be selected from the keyboard, using the keyboard shortcut "command B". A demonstration of how these things can be accomplished will constitute the first part of my presentation. Though very important, typing ease must sometimes be sacrificed in order to achieve a keyboard layout that is logically consistent and thus easy to remember. This is particularly true in the case of excessively complex fonts or those destined for only occasional use. Modifier keys (while requiring some added manual dexterity) can be extremely helpful here. I shall show how, with the aid of ResEdit 2, the symbols for a group of related sounds (such as a set of all of the accented variants of a particular vowel) can be assigned to a single alphanumeric key and distinguished from one another in typing by means of simultaneously pressed modifier keys. The same modifier keys can be used to access the corresponding variants of other sounds. Although the only modifier keys that the casual Macintosh user may be able to name are those labeled "shift" and "option", this set also contains "caps lock", "command", and "control". As if this were not enough, various combinations of two or more modifier keys can serve to differentiate additional symbols associated with a particular alphanumeric key. The modifier keys on the left side of Apple's extended keyboard can even be uncoupled from those on the right side!

Other topics discussed in connection with ResEdit 2 and Fontographer 3.5 will include: (a) the reassignment of the ASCII codes associated with special characters in one font to conform with those found in fonts for the same writing system obtained from another source, (b) the relative merits of two rather different treatments of diacritics and the letters which bear them, (c) the creation of new Postscript or TrueType fonts from existing ones or from bitmap fonts and scanned images.

PRESENTER'S BIODATA

Donald A. Becker is a Professor of German and Linguistics at the University of Wisconsin-Madison. His publications deal with German dialectology, the history of the German language, Hindi-Urdu phonology and lexicography, phonological theory, CAI, and the computerization of South Asian scripts.

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THE INTEGRATION OF FUTURE TECHNOLOGY PLATFORMS INTO THE MEDIA CENTER

STEIN BEXRUD, GARY SMITH, JOEL GOLDFIELD, BERND RÜSCHOFF

THE STARTLING START

Multimedia is everywhere today-why ? Because industry is searching for the missing billions. This is how they think:

When Americans leave their home for entertainment they spend roughly 5 billion dollars a year. At the same time the volume of video rental business is approximately 14 billion dollars.

This is thought to show that people like to be entertained at home. Now if we compare the volume of video games outside home and inside home, the situation is this. 7 billion dollars used in video arcades and only 2 million in homes. If we predict home market on the basis of movie-video rental comparison, almost 17 billion dollars are missing.

In education we get technologies for which the critical mass has been developed elsewhere. This has already happened in audio, video, satellite TV and personal computers .. and it is taking place in optical interactive media all the time.

The future of educational technology in language learning is that of integration. We have two strategies of integration;

1. educational/ instructional and
2. technical

We will very much concentrate on the educational side and start with a Guided tour in language center which has selected this route.

GUIDED TOUR

Group conference

In the group conference the students are been given the task which they have to prepare themselves for. The purpose of the Group conference is that all student can listen to each other and what they are saying. There should be an open discussion between teacher and students.

Media library

The Media Library can very easily be described by two key-words, 1. self-access and 2. Access to all technologies.

In the Media Library students very often work individually, either as separate workstations or in connection with the language laboratory e.g. IS-10MM provided from Tandberg Educational. One of the most important and essential parts of this student workstation is the student user interface. Any student entering the Media Center should be able to select a task from the main menu and start working immediately. There should be no need to know what kind of media the material is stored onto.

In order to illustrate this more clearly I would like to use an example of how the student user interface might possibly look like.

The program TEDNET is not a commercially available program, however, it gives you some basic ideas on how simple students may find the access and control of the media and material needed.

TEDNET demonstration...

For example, let us watch a group of students going through various steps in the process of studying German.

The task is to prepare themselves for a role play. First of all they have to study some video material to get an overview of the situation, then they will work with the audio only, to make sure they understood the dialects and the vocabulary used in the play. These are the steps they are going to follow:

Interactive video

They will first watch through the video situations taken from the laserdisc course "Die Deutsche Verbindung". Then, in order to concentrate on the specific phrase of communication - expressing thanks, they will work with the option called "Functional Analysis". The students should be concentrating on a particular language function - thank you - by working through all the available examples of people in a variety of different contexts and situations. Some of the phrases might be unclear and/or difficult to understand due to certain dialects or too much background noise, therefor they will be given the option to search for some specific phrases and then if required to record them. Random access is in this case a key word. The recorded phrase can automatically be compared with the original immediately after the student has recorded their own version.

Demonstration of *Die Deutsche Verbindung*....

Digital Audio

After having completed the video scenes with all its possibilities, they might wish to test their knowledge of the content by going through a series of multiple choice questions. For this purpose no video is necessary, only audio is required. They select "Multiple Choice" from the sub-menu - German exercise. The result of the multiple choice exercise will then be stored onto a file on the computer. The teacher may of course call up this file for later view and evaluation and grade the students performance.

Demonstration of Choicecart....

Computers - TEDLEX

Finally, the students will go through a vocabulary test to find out whether or not 1) they understood the meaning of a words, 2) they could translate the words, 3) if they could spell the word correctly, or e.g. 4) they could use the word(s) in their certain contexts.

The students accesses the program called TEDLEX, which provides an effective way to learn vocabulary and corrects, stores and sets grades to the exercise performed.

Demonstration of TEDLEX - Vocabulary trainer....

Various other sources

Additional other sources that could very easily be accessed from the student's workstation, are;

- CD-ROM
- CD-I
- Multimedia PC
- Satellite TV
- Local Area Network
- Worldwide wide band access
- Electronic Classrooms

Help from reception or teachers office through the Media Center Control.

In certain circumstances some of the students might need some assistance from a teacher or a supervisor, who very often is not located in the same room as the student's workstation. With IS-10MM, the teacher may be in his/her office while the students are working in the Media Center. As soon as one of the students calls for some assistance, the teacher may call up the student's screen picture onto his/her monitor and might if necessary take remote control of that student's computer. On the other hand, the teacher might give the student only some advice on how to continue with the program.

Multifunction classroom

A typical Multifunctional classroom would have a small group of individuals working with different types of media and changing their positions after a short period. The teacher would always be there to assist the students in their learning process.

The classroom should also have access to 2 - 4 computers, either IBM or Macintosh for certain CALL applications.

Another group of students may be watching a video program, while the rest of the group would be working with audio materials from an audio cassette.

Media Workshop

Today very often we see small editing workshop are offered with either a technician or a supervisor present.

In the future, we will probably see more of the kind as we see in the Desktop Publishing area, including not only text and graphics, but sound and video capabilities. Today some of these facilities are available, however, the hard drives are too small for handling such huge amounts of information.

Media Auditorium

With the Media Auditorium we understand a fixed system where the teacher or the presenter can insert the VHS cassettes into the recorder and by pressing only one button all functions should be operational. This is not either difficult nor impossible today, the main problem is that very often things does not work due to incompatibilities between formats, standards, etc. In the future when we have greater access to wide band networks, this would more look like a server, directly connected to the video projector. All functions should be simple to operate, either from a keyboard or with a remote control unit.

A very essential part of these Media Auditoriums is that they must be open systems, supporting equipments from more than one manufacturer.

ANALYSIS FORM EXISTING INSTALLATIONS

We would like to give you some examples on installations of media centers in Europe.

University of Amsterdam

We would like to give some examples on focus on what impact a introduction to the media center has. The first figures comes from the University of Amsterdam in Netherlands, which very clearly illustrates the impact the introducing multimedia technology - the media center - on the number of students visiting the facilities. Up until 1985, the University only possessed basic language laboratories. During the 1985/86 period, the traditional language laboratory was completely redone and made into a media center. Immediately we could see the number of students visiting the center rose by more than 300% over a period of only two years.

Year/# of students visiting the media center	
1981/828,000	1986/8,744,000
1982/837,500	1987/8,853,000
1983/849,700	1988/8,951,000
1984/8,510,000	1989/9,056,000
1985/8,620,500	1990/9,162,000

University of Cambridge

(Slides shown from installation.)

University of Oslo, Bergen, Trondheim and Troms

The Norwegian PTT and UNINETT has established a trial 34Mbit/s switched network interconnecting the four universities in the country. The main usage of the network will be for distributed multimedia applications.

TECHNICAL ANALYSIS

Everything, both audio and video, is going to be digital and the main benefit will be random access and easy manipulation.

Examples:

- Access to multiple representations of language - dialects, multimedia dictionaries,
- Manipulation a la the music industry (e.g. echo, speed up and slow down a speech),
- So easy video editing that everybody can use it.

DEFINITIONS

Multimedia-There are as many definitions as people operating in the business. There are many multimedia platforms, and many types of program. In broad terms it is the combination of some, but not necessary all, of the following; full motion video, animation, high resolution graphics, text and audio; delivered on a single, computer based workstation.

Main Areas of Multimedia Technologies-By combining the three main areas of Multimedia Technology - Broadcasting, Publishers, and Computers - we receive different types of products / platforms.

Media Center-The Media Center is very often associated with a language laboratory, with the extension of video and computers. Self-access student workstations are often connected to a local area network or a global network utilizing wide band or fibre optics, to store and share information, materials and devices.

Future Technologies-Any new platform will basically be built up around the existing concept of multimedia technologies, containing video, sound and text. Cross platform standards will become available describing how audio and video should be addressed. Theoretically this means that any new multimedia product can be integrated into the media center, regardless of hardware or software.

Benefits of learning by using interactive technologies

We all know that the more sense we use, the higher our retention will be. A research made by the British Audio / Visual Society gives a very good illustration of the impact multimedia technology has on the learning process.

Senses used	Retention in percentage
Read	20
Hear	30
See	40
See & Hear	50
Say	80
Say & Do	90

Other major benefits from using interactive multimedia technologies are;

1. Reduced learning time
2. Reduced cost
3. Instructional consistency
4. Privacy
5. Mastery learning
6. Increased retention
7. Increased safety
8. Reduced behavior problems
9. Increased motivation
10. Increased access

OPTICAL TECHNOLOGIES MEET SOCIETAL NEEDS

Formal Education

The increasing demand for a higher literate population is placing a great deal of pressure on the traditional educational system - which is faced with numerous internal and external dilemmas. The following major shifts occurring within formal education can be met educationally with appropriately designed optical curricula:

- the increasing numbers of "at risk" students
- the increasing in non-English speaking students
- the teacher shortage

At Risk Students

More and more students are categorized today as "at risk". That term refers to students who are in danger of failing to complete their education with an adequate level of skills. Risk factors include low achievement, retention, behavior problems, poor attendance, low socioeconomic status, and attendance at schools with large numbers of poor students.

Limited-English-Speaking-Students

Classrooms today are populated with students from diverse backgrounds who bring a greater variety of languages, values, culture, and abilities than ever before. Large number of students speak minimal or no English. E.g. The Los Angeles School District already has students who speak 81 different languages.

Multilingual curriculum is needed and the various optical media provide many modalities in which to deliver the instruction: video, audio, text, and graphics.

Teacher shortage

America will need to replace one million teachers before the end of the century, but only eight percent of today's 1.6 million college freshmen are interested in teaching - and only half of those are likely to actually go into the profession.

The teacher shortage will result in either more students per classroom and more students per teacher - students who will be in serious need of individual attention, or increased demand for self-access workstations, or distance learning. At the same time the teacher will be in critical need of assistance - assistance which can be provided by well-designed multimedia courseware.
Education and Training Trends

Futuristic technologies, such as talking computers, voice recognition, will soon become commercially available.

A shortage of teachers, a changing curriculum, and financial constraints are placing pressures on educational establishments which have rarely been so acutely felt as in recent years.

ADOPTING THE MEDIA CENTER APPROACH

Since the term Media Center has been adopted by the Linguistics, we might call an approach which adopts a variety of these approaches to training might be called a corporate multimedia approach.

The first step is to break the language learning process into skills areas. We can identify the four basic language activities of speaking, listening, reading and writing. Further skills areas include vocabulary, grammar, pronunciation, fluency and communication skills.

By drawing a table of the learning elements and the potential training media, the teacher can begin to develop an idea of what the media center may include.

We can formulate a learning strategy based on a variety of materials and inputs. These may vary from reading at home, listening to an audio tape, watching a video play, to language laboratory practice, multimedia language practice, classroom role players and even a visit to a foreign country.

Students will inevitably become more and more familiar with multimedia technology. It is essential that the media is introduced well, and that they approach learning with a flexible mind. This will ensure that in several years time the student will have to take further responsibility for their own learning process.

The final decision will include some considerations on how much the complete media center should cost.

CONCLUSION

One of the first steps in incorporating multimedia centers is to assess what the technology can do. Teachers should concentrate on what is available now, rather than what is promised for the next year.

Once the decision to include a media center has been made, training materials developers, teachers and students need to become more familiar with the idea of using multimedia as an integral part of the training process.

A well designed multimedia application should be;

- Multi Cultural,
- Multi Lingual,
- Multi Functional and
- Multi Platform

if it should ever should become a real success.

TANDBERG EDUCATIONAL

Tandberg Educational will focus on being the specialist on system integration. We see our role of the future as putting together whatever is available, optimize it and test it according to the specifications and needs of our customers. We will make the user interface as logical as possible, linking the latest technology available to the changing methodologies in training, especially language training specifically.

PRESENTER'S BIODATA

Stein Bexrud has been responsible for the Multimedia Product Range from Tandberg Educational for the last 4 years. Bexrud has consulted and assisted many instructors in determining language laboratory needs. His experience and knowledge with Tandberg products are valuable assets when designing media center facilities.

Dr. Joel Goldfield is Associate Professor of French at Plymouth State College (NH) and consultant in Methodology and CALL for Language Outreach at Dartmouth College. He has published CALL software, articles and reviews.

Gary Smith is Associate Professor of Modern Languages at the College of William and Mary in Virginia. He has extensive experience with authoring systems and programming languages such as CALIS, PC-Pilot, HyperCard and ToolBook. He recently helped plan and implement the installation of a new Language Learning Laboratory at the College of William and Mary, and has developed a number of programs being used there.

Dr. Bernd Rüschoff studied English, Slavonic Languages, Philosophy and Education at the University of Münster (Germany). He continued his studies at the University of Alberta (Canada) and at the University of London, where he obtained a Ph.D. in Russian Linguistics. He is currently head of language section of the Audio-Visual Media Resource Center at the University of Wuppertal (Germany).

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THE FOREIGN LANGUAGE TROUBLESHOOTERS IN CONJUNCTION WITH IBM'S AUDIO VISUAL CONNECTION (AVC) ON A LOCAL AREA NETWORK

JAY F. BODINE

ABSTRACT

For authoring written learning activities, the Foreign Language TroubleShooters driver program requires only straight-forward text in DOS/ASCII format -- with the question on one or two lines and the answers on the following line. The author of an exercise can furnish up to two correct answers for each question in the sentence-rewrite exercise format. (The driver programs "parse" the student answer according to characters and word order and then check the results against a "parse" of that correct answer the student matches most closely.) The mode of presenting the problem to the student, and the way of presenting the need for any corrections, including word order, allows the student to focus upon the correct portions of his or her answers and to quickly fix the wrong parts.

But the driver program's interaction with IBM's Audio Visual Connection will also allow the instructor to produce and to incorporate digitized sound and still images (or video, s\using the ActionMedia II hardware) as either the introductory background or as the individual cues for a written response; that is the AVC system when coupled with the Foreign Language TroubleShooters, makes them to respond to in writing, and then have their answers checked to that they can immediately correct any wrong responses.

Sections from a Video or generally an aural recording can be used as an introduction upon which t base content or linguistic questions. Or individual aural statements and questions can be posed, to which the student responds in written format and has their responses analyzed. Thus, simple dictation exercises are possible, as well as content questions and more elaborate, though strictly delimited grammatical completions, transformations and generations.

PRESENTER'S BIODATA

Jay F. Bodine -- Ph.D. in Germanic Languages and Literatures, Princeton, 1973 -- implementation and development of CALL and the Foreign Language TroubleShooters since 1984; has taught at Princeton University, the University of Kentucky, Southern Illinois University - Carbondale, and Colorado State University.

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THE PHILOSOPHICAL CHALLENGE: ICALI AND ARTIFICIAL NEURAL NETWORKS

FRANK L. BORCHARDT

The bulk of this position paper rehearses the series of presentations made by the author at CALICO over the years 1988-1991; it concludes with observations on cups and lips.

The field of Artificial Neural Networks, fallow in North America for almost a generation, felt the plow again in the very few years before early Summer 1987. That June in San Diego, the landmark "First International Conference on Neural Networks" was held before a huge crowd of several thousand participants and observers. (IEEE First International Conference on Neural Networks, San Diego June 21-24, 19872) A colleague who had gone to the ICH conference instead noted wryly that 250 people had shown up at the meeting of an established society, where ten times that many had chosen to hear about a field no one was quite sure existed. What came out, at that landmark meeting, early and often, was a profound hostility to AI as espoused at MIT, even though the guiding light of that lab had early in life designed an elaborate electronic artificial neural network. ANNs were supposed to establish a radically different model, not serial but parallel, not digital but analogue, not symbolic but connectionist, not local but distributed, not deterministic but associative, not *a priori* but inductive. "There are no symbols, only contexts." There seemed to burst forth some kind of new hope in robotics, in computer vision, in Natural Language Processing for an actual delivery what AI had been promising for years.

The plausibility of this hope was buttressed by some stunning early experiments. Of these, the most accessible was Terrence Sejnowsky's "NetTalk," a text-to-speech machine. (Sejnowski, Terrence J., and Charles R. Rosenberg."Parallel Networks that Learn to Pronounce English Text," *Complex Systems*, 1 (1987), 145-168; Sejnowski, Terrence J., and Charles R. Rosenberg. "NETtalk: A Parallel Network that Learns to Read Aloud," *JHU/EECS-86/01*, Johns Hopkins University, EE/CS Department, January 1986.) He successfully trained a speech synthesizer to pronounce English without an algorithm, but rather from examples, and more or less as well as a child of three might pronounce English. The final result was not what was so disturbing about this experiment, but rather the process. Part of the way through the learning the result was tested chiefly to make sure that the network was not memorizing the words but rather generalizing from examples. In the first steps beyond mere gibberish the network had learned the distinction between vowels and consonants, though, to be sure, it pronounced all consonants as one and all vowels as one. To hear this intermediate and then the final result is enough to make a believer out of anyone even though Marvin Minski having heard the tape, denied that the final result sounded like speech at all, human or any other kind. But be consoled: word had it that the Sejnowski experiment was successfully replicated in Austria in German, leading one to question the disinterestedness of Professor Minski's hearing.

Closer to home, at the North Carolina State University, a student of CALICO member Sofus Simonsen, (McKee, P.G. 1987: "Learning Genders of German Nouns: A Neural Network Application", Neural Engineering Technical Report 88-10, Center for Communications and Signal Processing, North Carolina State University.), struggling with the gender of German nouns, devised a network similar to Sejnowski's, which he trained to recognize the gender of a random half of the nouns in his textbook. This it did very well, leaning over 98% of what it had been taught. He then tested the network for what it had learned on the other half of the nouns, and it got almost 2 out of 3 correct. And the mistakes that it made were rather like those students would make (chiefly, overgeneralizing).

One rather disturbing result of this experiment was the "second-best guess" phenomenon. If the network's highest certainty level was wrong, its second highest level was almost always right, and it had near zero certainty that the third alternative was possible. In all but one or two cases (das "Ende"), the network consistently guessed right about which gender the noun was *not*. This experiment and its variations were shown over the years to many visitors. One of these was the brother of the President of the Czech Republic, Dr. Ivan Havel. He was equally disturbed by the "second best guess phenomenon" and tried to force the network to reveal its reasoning by inputting slight variations of such a word, one vowel off or one consonant off, etc. The network, not surprisingly for people familiar with them, revealed no consistent pattern to these stimuli. In frustration, Dr. Havel input a Czech work. The network responded after some "thought" (processing): "I am near 0% certain this is masculine; I am near 0% certain this is feminine; I am near 0% certain this is neuter." In sum, the network recognized that the input string was nothing like anything it had been trained on, that is, that the string was not German. We are calling this "the Havel Result." It basically proves that an Artificial Neural Network can, at the very least, negatively recognize language.

This result was closely parallel to another experiment conducted at Duke, the "bogus input experiment." Students doing CAI homework had the choice of giving up after one attempt and receiving the correct answer from the program. A few students, we learned from analyzing input data, routinely typed in garbage as their first attempt, gave up, transcribed the right answer, and repeated the exercise from their notes. It seemed like a worthy exercise for an ANN to see whether one could recognize and intercept garbage and tell the student "Big Brother knows what you are doing and doesn't like it." This network trained on legitimate strings from the original dataset ("right answers") and legitimate but erroneous answer attempts (from student input data). As it turned out, the network almost never classified a right answer or a legitimate attempt as "bogus" but caught bogus attempts only about half the time. We found this result altogether satisfactory for practical purposes. Designating a right answer or a legitimate attempt as bogus would be pedagogically disastrous, whereas missing a few bogus attempts wouldn't hurt, as long as they were caught sooner or later. This kind of "tolerance" one should note in passing is what distinguishes ANN strategies radically from rule-based systems.

Similar tolerances emerged from yet another Duke project experiment ("Hyphenation and `Bogus' Word detection: An Experiment in the Economic Use of Neural Modelling in Text-Processing." Frank L. Borchardt, Andreas Geyer-Schulz, Wolfgang H. Janko, Nick Staddon, Hongbin Wang. *Diskussionspapiere zum Tätigkeitsfeld Informationsverarbeitung und Informationswirtschaft*. Vienna, April 1991). German hyphenation conventions were employed as a worst case. A network was trained on several corpuses of most frequently used German vocabulary. When novel input tested the results, the network regularly chose correct hyphenation points but often not all of them and rarely chose erroneous hyphenation points. The experiment indicated that an ANN could be used successfully as an alternative to algorithmic hyphenation strategies, and, more importantly, could be used as a strategy for producing acceptable hyphenation mechanisms for underdocumented languages, such as Kurdish, for which no hyphenation rules were known at the time of the experiment.

In collaboration with colleagues in the Slavic Languages Department at Duke, the Project undertook an experiment to compare the performance between human informants and an ANN when it came to nouns of ambiguous gender in Russian. ("Gender Signalling in Russian: a Contrastive Analysis between Native Speakers and Neural Networks." Forthcoming in the June issue of *Language Quarterly*.) We are hoping for imminent publication of this experiment. The questions were more complex than in other of our experiments and the conclusions are a bit more subtle. In a supervised learning environment, an ANN, once employing purely orthographic representation (spelling alone), once employing morphophonemic representation (phonetic representation of grammatically significant parts of the noun), showed that it could learn 99% of the words presented to it and replicate correctly even ambiguous gender assignment. It refused to learn the eccentric gender of a "fond diminutive" *da'da'*, which form dictates should be feminine, but which meaning dictates should be masculine.

As a control, the identical network was "trained" on a set of nonsense words to see whether it would produce a similar but pseudo-result. Happily, the network found no identifiable patterns in the nonsense dataset, which indicated a high probability that the network was in fact identifying patterns and not memorizing answers. The network, trained on the actual dataset, however, had great difficulty identifying novel input correctly, especially by contrast with the human informants. Once it was supposed that stress, in addition to morphemic information might improve the network's performance. That proved to be inconsequential for the network, but very important for the human informants. We assume that the relatively small size of the dataset (666 words) may be to fault. The most substantial distinctions between ANN and human performance came when semantics played a role. The network was wholly lacking any semantic information whatsoever. In a great number of cases, human decisions on words of morphologically doubtful gender were based on meaning. Perceived foreign origin also seemed to play a part. The experiment seemed to prove that formal marking, while systematic and not random, was by itself insufficient to determine the gender of ambiguous Russian nouns, that phonetics (stress), perceived origin, and semantics were at least equally influential in human beings making gender assignments. This is, apparently, a significant result for the conventions of Russian grammar, which, like German, is generally agreed to assign gender principally on morphological grounds (which is a way of saying, a kind of lost and forgotten history).

Finally, the Duke Project presented to CALICO in 1990 the possibility of a Chinese "Pseudo-Parser", a network which would be happy with learning sequences, retain information about previous states of a sentence at a decaying rate, learn what the allowable sequences of word-classes may be, and predict, with enough evidence and training time, the probability of what the next word-class would be for any given phonetic input. This strategy is meant for the disambiguation of phonetic inputting of Chinese.

The network is exposed to the string directly at a certain activation level but also at a variable but lesser decay rate, so that "memory" of one input string will be passing through the network at the same time as but at a lesser rate than the next input string. The network is thus being trained on sequences of word-classes which may be as long as two or three while it is learning what the next state of the sentence may be. One can picture the process as a window of two or three slots passing across a sentence and learning what the allowable and then more or less probable sequences are in the dataset. If the dataset is truly "typical," and the network functions as envisioned we should be able to take its results and implant them in a Chinese editor at a cost of no more than 6 or 7k. If the feature were turned on, the inputter would, when reaching an ambiguity, be presented only with those alternatives the network learned as allowable at that point of a "typical" sentence, and those alternatives would be presented in order of probability. Alas, the decision to employ a two-byte, UNICODE compliant environment for the Project's inputting of Chinese has delayed final implementation of this scheme, but we trust, not indefinitely.

"But what have you done for us lately?" During the first flush of excitement over the possibilities of strategies alternative to traditional AI approaches, exciting preliminary and experimental results were produced across the field of ANNs. Just as a kind of depression was setting in, waves of new fashions rolled over the same beach, "fuzzy logic" and more recently "Chaos." This may give ANNs the appearance of an old fashion, a kind of hula hoop, bell-bottom trousers, or polyester leisure suit. But actually the History of Science may assign ANNs another role, regardless of their eventual success, and that would be role of the or an opener of the flood-gates for more or less popular understanding of non-linear, not "rule-based," (unless we redefine "rule"), not "symbolic" (unless we redefine "symbol") models of things in general, including language.

As early as 1988 (Hubert L. Dreyfus & Stuart E. Dreyfus, "Making a Mind Versus Modeling the Brain: Artificial Intelligence Back at a Branchpoint." *Dædalus* [Winter 1988], pp. 15-43) the brothers Dreyfus warned of the failures of rule-based AI when confronted with the "combinatorial explosion": even if the presuppositions are so, and that a rule or theory can be articulated for each and every "symbol" (if they exist), then the interplay of the rules will sooner or later exceed the power of even the largest imaginable computer to process. They warned that precisely the same limitation faces connectionist models, perhaps even much earlier than is the case for their symbolic counterparts.

Does this mean then that the laborers in AI fields, particularly in the corners thereof as applications intensive as CALL, are doomed to be laboring in vain? The applications of Loritz, Sanders, DeSmedt, and Bailin, among others, would indicate that this is far from the case. What is perhaps more important, however, even than these successes, is the opening on the horizon provided by research, an opening that always sheds light on the rest of the strenuous day-to-day business of CALL. It may be possible that the principles behind our practices may some day make a lasting contribution to human understanding of language itself. That possibility alone, and not the utility of an application, justifies stubborn persistence in the work of intelligent CAI.

PRESENTER'S BIODATA

Frank L. Borchardt, Ph.D., is professor of German at Duke University and Executive Director of CALICO. He has taken a perverse interest in Artificial Neural Networks (ANNs).

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"PRACTICING SPOKEN FRENCH" (PSF): MULTIMEDIA COURSEWARE FOR IMPROVING ORAL COMMUNICATIVE SKILLS

ISABEL BORRAS

BACKGROUND TO PSF

"Practicing Spoken French" (PSF) was developed by the presenter for use in her doctoral research project conducted at Louisiana State University (LSU) in April 1992.

Basically, the main focus of the experiment implemented with PSF was to examine the effects of subtitled video during the practice of two transactional tasks (description and narration) on oral communicative performance of fifth semester college students of French.

The study used a 2 (subtitles vs. no-subtitles) x 2 (higher-level task vs lower-level task) factorial design. Forty-four students of French 2154 and 2155 at LSU were randomly assigned to these four treatments: T1) subtitles/lower level task; T2) no-subtitles/lower-level task; T3) subtitles/higher-level task; and T4) no-subtitles/higher level task.

Subjects worked during two 1 hour sessions on the units, "Description" or "Narration," they choose from the two programs of the PSF package. Analyses of variance conducted on subjects' overall Oral Performance scores and subscores (Effectiveness, Accuracy, Organization, and Fluency) indicated that subtitles had a significant effect on college students' productive use of the foreign language.

Attitudes of all subjects toward the computerized speaking experience (experience itself and multimedia package) was highly positive. Attitudes of subtitles subjects were significantly superior to those of no-subtitles subjects.

Software and Hardware Selection

Two software tools, *Hypercard 2.0* and *Voyager Videodisc* 2.2 were used in the development of the courseware package. While the first of these tools provided the"physical" structure of the courseware lessons, the second one allowed for the control of the videodisc segments by the computer program.

The courseware was run in four workstations housed in the computer laboratory of the College of Education at LSU. Each of the workstations included the following hardware components: I) A Macintosh IIsi microcomputer with 5 MB RAM and 80 MB Internal Hard Disk; 2) An AppleColor High-Resolution RGB Monitor (13"); 3) A Pioneer Laservision Player (LD-V2200); 4) An Amdex Color 300T TV monitor; 5) A Personal LaserWriter LS printer.

The first of the above components, the Macintosh IIsi, was chosen because its in-built recording capabilities made this computer particularly appropriate to handle one of the objectives of the experiment which was to have subjects record their own oral samples with ease. The last of the components, the printer, was included in the workstation for something more than having users get a copy of their oral sample's drafts. The researcher thought, and results ratified her guess, that allowing users to "touch" their typed products could increase users' willingness to work harder in the preparation of the oral tasks.

Courseware Design

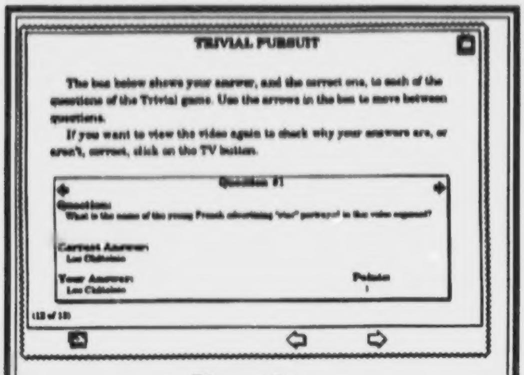
Wittrock (1974) contends that meaning from material presented by computer or any other medium is generated by activating and altering existing knowledge structures in order to interpret what is presented. 'The amended structures are then encoded in memory as distinctive features that may be accessed later to explain or interpret new information. In the same way, Jonassen (1988, p. 155) observes that, "The emphasis of instructional activities embedded in courseware should be on facilitating knowledge acquisition by making the learner processing more generative. "

Subscribing to these views, "Practicing Spoken French" (PSF) features a menu-driven design which: 1) allows users' free choice of tasks' modules, 2) indicates users' completion of modules within a task, and 3) provides users with convenient points for exiting and reentering the modules.

How PSF Looks

Building upon a variety of audiovisual resources which include animations, graphics, music, recorded voices, and videodisc segments, "Practicing Spoken French" is made up of three HyperCard stacks: 1) the "PSF Resources" stack which contains pictorial and textual information; 2) the "PSF User" stack which has 57 cards featuring the tasks users perform with the courseware; and 3) the "Très Utile" stack which has 22 cards containing specific information about the tasks, and which can be accessed from a particular card of the "PSF User" stack.

The "PSF User" stack consists of two similar programs, each of them having two distinct units, "Description" and "Narration," organized around two modular extensions. An overview of the Description Unit of Program I follows.



TRIVIAL PURSUIT

The box below shows your answer, and the correct one, to each of the questions of the Trivial game. Use the arrows in the box to move between questions.

If you want to view the video again to check why your answers are, or aren't, correct, click on the TV button.

Question #1

Question:
What is the name of the young French advertising "star" portrayed in the video segment?

Correct Answer:

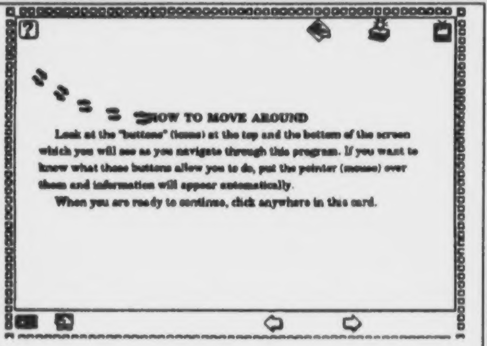
Your Answer:

Points
1

Figure 2

Introductory Screens

To get into Program 1, users double-click on the stack of their name. Once within it, they go through seven introductory screens which contain information about the objectives and prerequisites of the program. One of the screens, displays a picture of various faculty members at LSU and asks users to click on one of the members' name to listen to what he says about the program. Another screen, "How to Move Around" (see Figure 1) shows and explains the meaning of the icon-buttons which users will encounter throughout the program. A final introductory screen, the "Home Card," shows users how to get into the various modules of the two units of the program.



HOW TO MOVE AROUND

Look at the "buttons" (icons) at the top and the bottom of the screen which you will see as you navigate through this program. If you want to know what these buttons allow you to do, put the pointer (mouse) over them and information will appear automatically.

When you are ready to continue, click anywhere in this card.

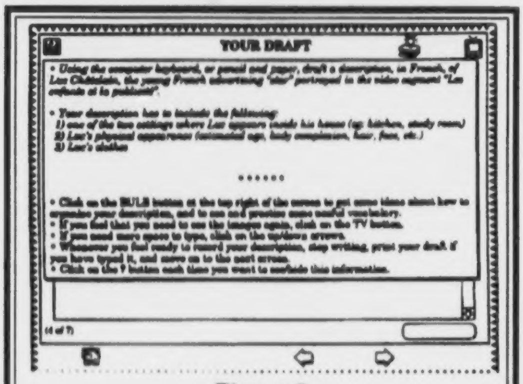
Figure 1

Module 1

If users decide to visit the first module of the "Description" unit, they click on the Module 1 button of that unit, and a screen consisting of a scanned picture (BR University Lake) and a caption (definition of description) appears. Once within the module, users enter the "What to See" screen to view the video segment they will have to describe later. To reach the video segment, users click on a TV button at the top right of that screen and a "palette" with the control buttons of a videodisc player appears. After viewing the video segment, users may check their comprehension by attempting to answer six questions of a trivial pursuit game for which scoring and feedback procedures have been properly ensured (see Figure 2).

Module 2

The second module of the "Description" unit begins with a screen featuring a picture and a caption similar to those of the initial screen of the first module. Next, there is the "What to Describe" screen which asks users to depict the



YOUR DRAFT

Figure 3

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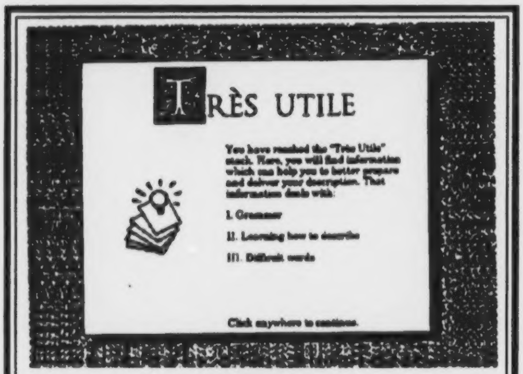


TRÈS UTILE

You have reached the "Très Utile" stack. Here, you will find information which can help you to better prepare and deliver your description. That information deals with:

I. Grammar

II. Learning how to describe

III. Difficult words

Click anywhere to continue.

Figure 4

main character of the video segment seen on the previous module. Later, in the "Your Draft" screen, users may type and print what they are going to describe orally following the directions found on a Help window (see Figure 3). From the "Your Draft" screen, users may call upon the video segment or enter the "Très Utile" stack to explore its three sections: 1) grammar; 2) learning how to describe; and 3) difficult words (see Figure 4). The last of these sections provides for the translation, listening and practice of ten words heard on the video segment.

The next to last screen of the module introduces the "Recording Studio" (see Figure 5). There, users record the descriptions they have prepared on the "Your Draft" card. On the last screen of the module, "What to Do Next," users may decide between leaving the program or continue working on the "Narration" unit. If users opt for the second decision, they enter the first module of "Narration" and a flow of screen similar to the ones described above follows.

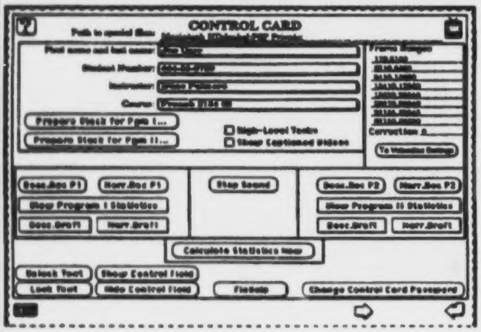
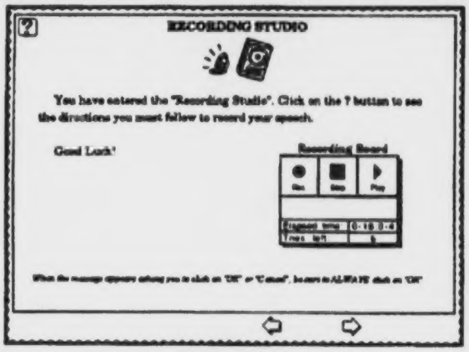

CONTROL CARD
Path to special files:
First name and last name:
Student Number:
Instructor:
Course:
Prepare Stack for Pgm I...
Prepare Stack for Pgm II...
High-Level Tasks
Show Captioned Videos
Frame Ranges
Correction
To Videodisc Settings
Desc.Doc P1
Narr.Doc P1
Stop Sound
Desc.Doc P2
Narr.Doc P2
Show Program I Statistics
Show Program II Statistics
Desc.Draft
Narr.Draft
Calculate Statistics Now
Unlock Text
Show Control Field
Lock Text
Hide Control Field
Change Control Card Password

Figure 6

A "Control Card" (see Figure 6) orchestrates the three "Practicing Spoken French" stacks. This card, not accessible to the user, allows the instructor: a) to enter the user's personal data; b) to select the program number (1/2), the task level (higher or lower), and the video segment type (subtitled/unsubtitled); c) to define the videodisc settings; d) to access the information recorded by the computer about the user's performance and time spent on the various parts of the program; and e) to see and listen to the user's drafted and recorded oral sample.

PSF Technical Features

"Practicing Spoken French" is programmed to offer the user and/or the instructor the following possibilities: 1. Run and play back a section of video (with or without subtitles). 2. Listen to text displayed on the screen. 3. Run and play back a native speaker/instructor's audio message. 4. Run and play back the user's voice. 5. Go to the beginning/end, slow down, freeze, fast forward, and rewind videodisc images. 6. Show or hide help windows. 7. Go backward or forward to other screens or stacks. 8. Scroll through text or a section of text. 9. Record subjects' scores on listening comprehension and provide immediate feedback on correct and incorrect answers. 10. Keep track of the time spent by users on the different stages of a program unit (viewing, answering video related questions, drafting and recording an oral sample).



RECORDING STUDIO

You have entered the "Recording Studio". Click on the ? button to see the directions you must follow to record your speech.

Good Luck!

Recording Board
Rec
Stop
Play
Elapsed time
Tries left

Figure 5

Using PSF: Optimizing Comprehensible Output

Learning to talk in "long turns" seems to be essential for the development of communicative skills (Brown & Yule, 1983). However, this condition being important, it is not sufficient; ability to communicate has to be measured in terms of speech's quantity and quality. As Swain (1985)

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observes, comprehensible input is not enough to promote second language; learners must also engage in comprehensible output in order for the morphosyntax of the interlanguage to develop sufficiently to reflect a level of mastery of the target language. Agreeing with this view, the main goal of "Practicing Spoken French" has been on getting users to produce oral samples whose length and, particularly, comprehensibility might be judged as "optimal" by French intermediate level standards.

Two characteristics of the courseware, a tension-free environment and the systematization of the design, have contributed to attaining this goal. First, attempts have been made to avoid giving users the feeling that they were being coerced, or pressured by the computer: a) by adding pictures of local people or landscapes, which gave PSF users the feeling that the package was specially designed for them; b) by including some relaxing as well as some rewarding music excerpts; c) by writing the program's directions in a friendly tone; and d) by maximizing the number of choices available to users within the package (e.g. type of task, number of times to see the video segments, number of times to enter "Très Utile" or number of times to record the oral sample). By virtue of these four factors PSF releases users from their reluctance to speak, record, and listen to their own voices in the target language, thus increasing their confidence to participate later on in real communicative situations.

The second characteristic, the systematization of the design, may have specially contributed in building up the so-called "performance memory," (Rivers, 1991) and, in turn, increasing the accuracy of the oral output. Such systematization is characterized by: 1) the sequential ordering of the instructional events; 2) the segmentation of the programs' tasks into units and modules which allows the practice of the four language skills in two progressive sequences-reading/listening/writing (Module l), and reading/listening/writing/speaking (Module 2); and 3) the hierarchical organization, in a systematic top down fashion, of the information presented in "Très Utile" (*Grammar, How to Describe/Narrate,* and *Difficult* Words), which allows learners to put into practice, and to integrate into their semantic networks, grammar rules and lexical input.

The emphasis on systematization is both theoretically and empirically grounded. Indeed, cognitive psychology theorists (Ausubel, 1968; Bruner, 1977) have noted that learning requires more than gaining automaticity. According to them, learning is the process by which organizational scores e.g., schemata are constantly modified in accordance with and for the purpose of integrating new information.

Sharing this viewpoint, second language acquisition theorists suggest that leaners should be provided with the organizations that enables them "...to see where they are going, (Rivers, 1991: 5), or that "the learner needs to impose organization and to structure the information that has been acquired" (McLaughling, 1987: 136). Also pleading in favor of systematization, instructional designers observe that freedom of choice, this key facet of hypermedia, may turn out to be a main drawback; and, as Marchionini (1988) puts it, "...a rich learning environment can become an environment of 'hyperchaos'...freedom to learn is not a sufficient condition to assure effective learning" (p. 10).

Underscoring the above views, a number of experiments on instructional design (Reif & Heller, 1984) have shown, the correlation between the organization of learning materials, and the resulting organization of internalized knowledge.

CONCLUSION

This presentation has had at its major focus to describe the development of the multimedia package "Practicing Spoken French" (PSF) which could illustrate a successful use of computer and videodisc technologies for teaching French speaking skills. More precisely, the presentation has looked at the package's background, authoring tools and hardware, configuration, design, and central emphasis.

Although results of the experiment conducted with PSF were highly positive, the courseware should not be perceived as the panacea of pedagogical devices for speaking practice. PSF has limitations. First, as any educational software, the effectiveness of PSF is somewhat limited to the rule-governing manipulation of formal structures (Winograd & Flores, 1986); and because of this limitation, practice with PSF can prepare, but not replace, those kinds of speaking practice which involve human interaction. Second, this is one of the first projects of its kind, and there are certainly many improvements to be made, such as the computer's assessment and feedback of the oral tasks which will only be solved as technology improves. Third, PSF is in need of further testing in different environments and with greater number of subjects.

In spite of these limitations, PSF has made significant strides in creating a learning environment which is both "pleasurable" and "sound." Its pleasurability is largely evidenced by the users' positive reactions. And this is certainly one of its main assets since learning, as sensitive educationalists remind us (Doll, 1989), should be an enjoyable experience. Its soundness is evidenced by the powers which it bestows upon users. Without dismissing arguments which rightfully criticize the mediocrity of some marketed software (Roszak, 1986), "Practicing Spoken French" gives users the power to: a) process audio-visual information at various depth and length levels, b) prepare two kinds of communicative tasks according to a suggested framework, and c) bridge the gap between the written and the spoken word. But maybe the best evidence of the courseware's soundness is provided by one student who liked PSF because it gave him ." .. a feeling of achievement."

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PRESENTER'S BIODATA

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DON'T USE A COMPUTER: A RATIONALE FOR APPROPRIATE TECHNOLOGY IN CALL EVANGELISM

CLAIRE BRADIN AND MARC SISKIN

The great energy on the part of CALL enthusiasts to encourage their colleagues to implement CALL is all too often unfruitful. Among the language educators who adopt ready-made CALL programs, relatively few are willing to undertake developing their own materials.[1] While many other factors[2] may contribute to this reluctance, it may be worthwhile to consider the way in which the whole process of computer-assisted language learning, not merely the software, might be presented to faculty members. Our premise is that the computer and software alone may not be the best vehicles for inspiring interest and satisfying the concerns of our colleagues.

Typically, a particular piece of software is demonstrated to a group of people as the presenter goes through various screens and explains the operation of the program. In recent years, such presentations have been enhanced by magnifying the computer screen with a large monitor, LCD panel, or data projector. This mode of demonstration is quite suitable for venues such as CALICO where the vast majority of the audience has worked with CALL, is already persuaded of its advantages, and can easily envision from what is shown how the software might be used. However, we suggest that it may be less appropriate for the inexperienced (and more skeptical) in that it fails to show the very aspects of CALL which most concern reluctant associates: how students actually use computers in a language learning environment and how teachers can implement their own curricular objectives through CALL.

In many respects, a well-designed video is a superior medium in its ability to motivate colleagues. The operation of the software can be shown, just as in the computer-only format. Additionally, the video can show how students interact with the software, with other learners, and even with their instructors. Thus, the process of language learning, of which the computer is only one component, is viewed in a wider context.

While a computer-only presentation may display a CALL lesson authored by an individual faculty member, only the final product is seen. The reaction may well be, "How did you do that?" A response of "Well, it was easy" may be met with skepticism; the more hesitant may need the reassurance of watching the actual process. In a live demonstration of the various steps involved in putting together multimedia materials involving graphics and sound, it is difficult for a large group to see the various peripherals such as scanners and sound digitizers. The use of video makes it possible to incorporate close-up views of these components and project them to a large screen.

Another important consideration is that in a video presentation, only the best "takes" are used. Despite the most careful planning, something may go wrong in a live computer demonstration. A technical glitch will not discourage experienced CALL practitioners, but for the uninitiated or suspicious, it further reinforces the notion that computers are not to be trusted. Everything functions smoothly in a video, so CALL is presented in a positive light.

In setting forth a rationale for using video instead of a computer to "sell" CALL, other practical advantages can be pointed out. One is the relative ease of presentation. The availability of equipment becomes much less of a problem, since videocassette players and large monitors are much more readily accessible in many locations than the precise configurations of computer and projection device which may be needed to show a specific piece of software. The use of video may offer greater flexibility in scheduling in that it may be shown several times. It may even be checked out for viewing at home or mailed to a colleague. The video is also a permanent record of the presentation which can be viewed as many times as desired; this is particularly important in an instructional context where various steps are demonstrated.

In an effort to motivate language teachers to create their own CALL materials and show examples of how to add sound and graphics, we have made a short video entitled: "Creating CALL Lessons: It's No Mystery." The first part shows English as a Second Language students working with the software, which was developed at the Economics Institute in Boulder, Colorado. It consists of rather simple HyperCard stacks for the Macintosh computer, which are grammar-based listening comprehension exercises. The advantage of developing materials which are tailored to complement a specific syllabus is underscored. In the second part, a teacher[3] describes how she became a "CALL convert" by watching students at the computer; she offers encouragement to those who have had little experience with computers.

The last part consists of a step-by-step demonstration of how to add graphics to a HyperCard stack through drawing, pasting in clip art, and scanning. Recording sound and adding it to the stack is also shown. Examples of how the pictures and sound might be used in various simple formats are also presented. The first and second parts were taped at the Economics Institute; the last part was taped, and the entire tape was edited, at the Language Resource Center of the University of Michigan.

Hindsight allows us to offer the following advice to anyone who might wish to produce a video on "CALL." The importance of planning before actually shooting the video cannot be overemphasized. Not only will careful planning reduce production time and costs, but having a definite focus should clarify the determination that video is actually the best medium for conveying the message in mind. The general scheme should include a decision about who the targeted audience will be, what their level of knowledge of the subject matter is likely to be, and how accepting of the subject matter they may be.

What will the video program show the audience? This might include techniques, a computer program in use, comparisons between programs, or the process of creating lessons. Once the content has been determined, an outline of the points to be covered can be prepared. The script may be written from this outline. Keeping in mind the differences in spoken and written discourse, the script should then be read aloud to determine how easy it is to say. Phrases should be short enough to say in one breath. Care should be taken to avoid jargon or explain specialized terms the first time they are used.

If possible, work with the video producer to determine what should be seen during each part of the script. Each scene within the program should show the key item the audience should be looking at during that segment. It should also be determined how the video program will proceed from point to point. Many types of transitions can be used, and the producer will need to know what transition to use when videotaping the program.

Cover shots should be planned. These are scenes which the video editor can use to compensate for having to use scenes that may have images that look almost the same but are slightly different. For example, the actor may make a mistake and the scene will have to be taped again. It may not be convenient to re-shoot the scene from the previous transition. So the editor has to piece together two different recordings that may or may not match each other. If they do not match, a cover shot can be placed between them so that there is a smooth transition.

An important part of planning is the site visit so that the producer will be able to identify in advance any potential problems with the location. When doing a site visit, there are several things to be aware of. One is the lighting available. Are there windows in the room? If so, will they be in the view of the camera or will they show any reflecting surfaces in the view of the camera (e. g., computer monitor screen or glasses). Sound is another concern. Many rooms that seem quiet can be noisy to a microphone. Sources of this noise can be the heating and air-conditioning ducts, people talking or walking by in the halls, and noises from outside the windows.

If the program will show computer screens, care must be taken to match the display rate of the computer monitor to that of television; otherwise, a distracting flicker will appear in the video. Matching the display rate can be accomplished with either hardware devices or software programs. Some devices provide a TV-compatible signal that can be recorded directly to a videotape recorder. Others adjust the display rate on the computer monitor to match that of the camera. Computer software programs can also adjust the display rate for several types of computers.

If the video program contains scenes that show the computer screen, the camera should fill as much of the screen with the computer image as possible. Also, the largest font size should be used in computer screen displays so that the letters can be seen on a small television monitor.

The next phase of video production is the actual videotaping. The actor (known as the "talent") should have the script memorized before recording. If the script must be read while the talent is visible on the screen, a copy of the script with a large typefont can be made so that it can be easily read from a distance. If the talent is to appear to be talking to the audience, these cue cards should be held as close to the lens of the camera as possible. The best locations are either just below the lens or to one side.

If a scene must be re-shot, editing will be easier if the scene is started at a point where there is a planned transition from one video image to another. If that is not practical, it should be started at the beginning of a paragraph in the script where one of the planned cover shots would be appropriate.

Before changing locations or moving items in the view of the camera, the videotape should be viewed to make sure that the segment just completed is satisfactory. This precaution will make it possible to re-do the scene without having to set up equipment a second time.

Once the program is shot and edited, it should be watched with the producer to ensure that it is complete and that there are no technical problems or mistakes.

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3. Janet Lewis, an ESL instructor at the Economics Institute, contributed substantially to the effectiveness of the video in her testimonial description.

PRESENTERS' BIODATA

Claire Bradin is a doctoral student in English at Michigan State University, where she is CALL coordinator for the English Language Center.

Marc Neil Siskin is Senior Media Designer at the Language Resource Center at the University of Michigan, where one of his responsibilities is to encourage the use of CALL.

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Technology and Teaming Advance Curriculum Development, Teacher Training

Diane Brundage and Christopher Columbus Consortium Representatives

PRESENTER'S BIODATA

A hallmark of Apple's approach to the education market is the strong partnerships the company has forged as a way to better meet the needs of education administrators, faculty and students. One such partnership is the Christopher Columbus Consortium, a program that teams elementary and secondary schools with schools of higher education to improve teacher instruction, student teaching, advanced technology training and creative instructional software. The program currently has 36 K-12 and higher education partners across the United States, and is designed to:

- increased teacher and student performance and quality of work;
- create models for substantive change by empowering teachers;
- generate excitement among classroom teachers provide a forum for teachers in different disciplines to share technology and teaching methods.

Consortium teams tackle specific aspects of curriculum development and teacher training, and their projects vary in order to develop not one model, but a network of models for change.

PRESENTER'S BIODATA

Diane Brundage is the director of Apple's Higher Education marketing and is responsible for all marketing programs to colleges and universities across the United States. She also directed Apple's marketing efforts to the nation's community, technical and vocational colleges and universities. Many of the marketing and development programs designed by Brundage have been adopted nationwide by Apple. Diane's educational involvement outside of Apple Computer has introduced positions with the Graduate School of Education Advisory Council at Pepperdine University and the Los Angeles Chamber of Commerce's Education Committee.

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MONTEVIDISCO ON THE MACINTOSH: AN UPDATE

CHARLES D. BUSH

ABSTRACT

Montevidisco is an interactive videodisc application intended for intermediate Spanish Students. It combines language enrichment with elements of role-playing games as the student plays the role of someone visiting a hypothetical city in Mexico, interacting with native Spanish speakers in native situations via videodisc. The concept originated at Brigham Young University in the early eighties, with the video filming done at that time. More recently, the BYU Humanities Research Center has adapted the original material to run on standard Macintosh and IBM-PC platforms.

At the 1991 CALICO conference in Atlanta we demonstrated a preliminary side-by-side version of Montevidisco using a HyperCard stack on a Macintosh to control a separate videodisc player and monitor. Since then a second version using video overlay has been under development, this time using ToolBook and Windows on an IBM platform. At the 1992 conference we talked about a third version that uses QuickTime on a Macintosh to display digitized video directly from the computer's hard disk.

This presentation will update the status of the two Macintosh-based projects. The side-by-side version is now "complete" and being used in intermediate Spanish classes at BYU and elsewhere. We will demonstrate the new features that have been added since the 1991 demo and also address some questions that have been raised. Development on the QuickTime version has proceeded to the point that some of the questions from last year have been answered, but others have arisen. What you will see in this part of the session is the current development version as of the day we leave Provo.

PRESENTER'S BIODATA

Charles D. Bush, M.A., Brigham Young University. Currently Senior Research Consultant with primary responsibility for Macintosh courseware development in the Humanities Research Center at Brigham Young University. He has done programming and CAI software development using HyperCard on the Macintosh since its inception.

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LARGE-SCALE DATABASES AND COST-EFFECTIVE INTERACTIVE MATERIALS DEVELOPMENT

MICHAEL D. BUSH

ABSTRACT

The foreign language education profession has lived for many years with the long-term promise that properly implemented multimedia technologies can significantly facilitate foreign language learning. Despite the inherent potential of multimedia technologies for enhancing a wide range of learning experiences, their use remains cost-prohibitive and there are yet many design and implementation questions that need to be addressed and answered.

One way to address these costs is to develop techniques that provide for the easy conversion of existing text-based assets to new delivery systems. This conversion opens up the ability to combine text with newly deliverable (and soon to be affordable) data types such as audio and video in the creation of rich learning environments for students. This presentation will cover some of the challenges of dealing with the conversion and re-purposing process. These challenges are not only technical but legal as well. Examples of work in process will be demonstrated.

PRESENTER'S BIODATA

Michael D. Bush, is serving as Associate Professor of French and Instructional Science at Brigham Young University in Provo, Utah. He is involved in programming different computers in various ways and using them to solve diverse problems. He has a very wide range of experience in the uses of high technology in education.

Prior to his retirement as a Lieutenant Colonel in the United States Air Force Academy in August 1992, he served as Director of Research in the Department of Foreign Languages at the United States Air Force Academy. At the Academy he played and instrumental role in the installation of what was probably the first operational interactive videodisc-based language center of its kind and size on any college campus in the world. He holds a Ph.D. in Foreign Languages and Computer Science from The Ohio State University.

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SPANISH INTERACTIVE VIDEO PROGRAMS AND THEIR EVALUATION

JAMES CHAMPION

ABSTRACT

The presenter will demonstrate features of model Spanish interactive video programs for listening comprehension which were developed in "Libra", a Hypercard-based authoring system for the Macintosh, designed at Southwest Texas State University with support from the Fund for Improvement of Postsecondary Education. The presenter will also discuss the results of assessment of the instructional effectiveness of the programs.

PRESENTER'S BIODATA

James Champion is Professor of Spanish and Linguistics at Southwest Texas State University. His research interests include Spanish Language/Linguistics and Computer Applications.

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ISSUES IN COMPUTER-ASSISTED ANALYSIS FOR ONE-WORD TEST RESPONSES

CAROL CHAPELLE

ABSTRACT

This paper illustrates the potentials and problems associated with computer analysis of one-word language test responses. Potentials include practical, text-based, gap-completion tests (e.g., cloze tests and C-tests) for large numbers of students and informative response evaluation procedures (i.e., partial credit and diagnostic scores). Problems include the need to hypothesize exactly what each item measures, what responses indicate partial ability, and what types of diagnostic information can be obtained from each item as well as the challenge of implementing evaluation procedures on the computer.

INTRODUCTION

One way to help relieve the tension that exists between language test validity and practicality is to have computer programs which evaluate language responses constructed by test takers. Because computer-assisted response evaluation has received little attention in language testing research (e.g., Henning, Anbar, Helm & D'Arcy, 1993), I chose to explore what appears to be very simple data--second halves of words. The issues raised in constructing evaluation rationales for these "simple" data, produced by a gap-completion test, are relevant to analyzing other types of constructed responses by computer. I begin by reviewing what gap-completion tests are and identifying the potentials of computer-assisted, gap-completion tests. I then describe the problems associated with constructing computer-assisted, gap-completion tests and my tentative solutions. Finally, I outline the research questions this work implies.

GAP-COMPLETION TESTS

The best-known gap-completion test is the cloze test, which is constructed by deleting some words from a written text (Oller, 1979). Resulting items look like this one appearing on a cloze test constructed from an article in *Scientific American* about how trees cope with diseases (Chapelle & Abraham, 1990):

Some bacteria infect inner bark and stay there creating diseases_______as annual cankers.

Cloze tests, used for a variety of purposes including proficiency and placement testing, have been a welcomed addition or alternative to multiple choice tests. However, because of problems with cloze tests in some settings (e.g., Alderson, 1979; Alderson & Urquhart, 1985; Brown, 1984), language testing researchers have worked on revisions to the original cloze, one of which is the C-test, constructed by deleting the second half of every other word in some sentences in a text (Klein-Braley, 1985). Resulting items look like these (Chapelle & Abraham, 1990):

Some bact___ infect in___ bark a___ stay th___ creating dise___ known a___ annual can___.

Research has indicated that the C-test format may solve some of the problems of the cloze; however, the C-test has its own problems, some of which are highlighted by computer-assisted response analysis.

POTENTIALS OF COMPUTER-ASSISTED, GAP-COMPLETION TESTS

In testing research and practice gap-completion tests have been used for years. CALL research and practice has also included gap-completion activities, often called "text reconstruction" exercises. However, on both the paper-and-pencil test and the computer-assisted exercise, responses are typically evaluated as either correct or incorrect. This practice, along with the practice of adding up the correct responses to calculate a total test score, have precluded careful consideration of the meaning of the observed responses. How might a computer-assisted response analysis improve a gap-completion test?

First, a computer program can award partial credit for responses which reveal partial ability. Instructors who have scored a cloze or C-test have experienced the counter-intuitive feeling of marking misspelled responses, for example, incorrect. On the fifth item of the C-test example above (whose correct response is "diseases"), responses like "diseses" and "disease" demonstrate some ability to respond even though they are not completely correct. Because constructed responses often reflect a continuum of ability (Canale, 1986), the practice of scoring them as either completely correct or completely incorrect misrepresents many learners' ability on many items and underestimates the range of ability of the group taking the test (Bachman & Palmer, in press). A response analysis program allowing the test writer to award partial credit for items judged partially correct holds potential for making total test scores more accurate.

Second, a computer program can tabulate diagnostic information on the basis of response analysis. Both instructors and students often find it useful to focus on components of language ability in teaching and learning, but tests often fail to provide component-specific information about learners' ability; instead, many tests, like the typical cloze and C-test, summarize learners' ability with one score. Because constructed responses contain information valuable for diagnosis (e.g., Birenbaum & Tatsuoka, 1987), a response-analysis program could identify and record the different types of errors evident in the learners' responses (e.g., spelling and inflectional endings for the responses "deseases" and "disease," respectively).

Third, computer administration and evaluation of gap-completion tests would make one type of constructed-response test practical. Such tests could be administered to large numbers of test takers in settings where currently multiple-choice tests are seen as the only option. Response evaluation could be accomplished while each student was working--at his or her own speed--and score reports would be available immediately. Individualized tests could be delivered using texts from fields appropriate for the students. Gaining these practical advantages, however, requires tentative solutions to three primary problems.

PROBLEMS OF COMPUTER-ASSISTED GAP-COMPLETION TESTS

The first problem is familiar to CALL researchers: how should we write programs to recognize linguistic responses? This topic has been the discussed at length in the CALL literature (e.g., Pusack, 1983; Sanders & Sanders, 1989) but remains an issue for each individual computer-assisted response analysis project. The second problem is also one encountered in writing instructional software: once the program has recognized the response, what should it do? If we wish to write programs which assign scores indicating partial ability and tabulate diagnostic information, we must hypothesize explicitly the underlying ability indicated by each item--a problem which has not been solved by previous testing research. The third problem is unique to assessment: what does the test score mean with respect to learners' ability to function in other contexts? The question of test score meaning is the ongoing concern of validity research (Messick, 1989; Bachman, 1990). Moreover, defining the intended meaning of test results is necessary for working toward solutions to the other problems.

TOWARD SOLUTIONS

By considering the existing evidence, one can arrive at multiple answers to the question of what the C-test measures (e.g., Klein-Braley, 1985; Feldmann & Stemmer, 1987) but let's consider evidence for C-test performance as an indicator of productive vocabulary ability. The primary argument for this position is that the expected response on the C-test consists of halves of words which the student must produce (Singleton and Little, 1991). Other evidence comes from research in which the C-test was more highly correlated with a vocabulary test that it was with other language tests (Chapelle & Abraham, 1990).

Despite these global perspectives on the C-test, computational response analysis requires that we consider items individually. We have to decide 1) which items are really indicators of vocabulary ability, 2) which responses indicate various levels of vocabulary ability, and 3) which components of vocabulary ability are evident in each response. In my data, I chose only content words (see Table 1) as indicators of vocabulary ability because definitions of vocabulary ability refer to content words, not function words. However, I eliminated the content-word items appearing in other parts of the text because test takers could copy them without knowing the vocabulary. Partial credit is awarded as indicated in Table 2. Each perfect response is awarded a score of 5; responses with observable errors lose points as indicated in Table 2. The diagnostic procedure yields information on the aspects of ability indicated in Table 3.

My current program for recognizing responses performs a simple match on the responses which need to be identified. I wrote the program by first entering all of the data into text files, sorting them to produce lists of existing responses, and considering each response to decide on the partial credit and diagnostic procedures. I then

Table 1: Vocabulary Items* on the C-test

Number	Word	Phrase
4	defense	...a means of defense that almost every...
10	forces	...move away from destructive forces.
13	types	...all types of living and non-living...
14	living	...living and non-living enemies.
15	non-living	...living and non-living enemies.
22	installing	...billions of repairs, installing new cells...
24	rejuvenated	...new cells or rejuvenated cells...
35	diseases	...creating diseases known as...
51	place	...compartments already in place...
52	strengthened	...compartments...are strengthened...
53	resist	...strengthened to resist the spread...
54	spread	...resist the spread of infection...
58	creates	...the tree creates a new wall...
63	contradiction	...came as a contradiction of early notions...
64	early	...a contradiction of early notions...
67	developed	...which were developed soon after...
69	foundations	...the foundations of modern biology...
70	modern	...the foundations of modern biology...

* The total number of C-test items is 75

applied the procedures (mentally) to each response to determine the values it should receive for partial credit and diagnosis. When the matching program runs, it takes the text files as input and returns, for each item, values for the five diagnostic variables (see Table 3), from which the partial credit scores can be derived. The output file containing all numeric data is then analyzed further using SPSS.

RESEARCH DIRECTIONS

We need to define clearly the abilities that gap-completion tests measure. This is a primary objective of all language testing research--providing construct evidence for test validity. Implementing computer-assisted response analysis, however, demands a more precise construct definition than what researchers have used to score items dichotomously or by human judgement (Bejar, 1985). One can evaluate a C-test item as correct or incorrect without hypothesizing the ability responsible for the correct response, provided criteria for correctness have been established. Decisions about partial correctness, in contrast, cannot be made without knowing the ability the item is intended to measure. For example, in evaluating the C-test items as indicators of productive vocabulary ability, we marked "deseases" as partially correct but if we wanted to use that item as an indicator of reading comprehension, we would want to mark it correct to reflect the test takers' understanding of the previous text. Defining the abilities measured by gap-completion items will be facilitated by constructing these tests on the basis of rational criteria.

We need to choose items using rational criteria. Rational gap-completion tests are not a new idea (e.g., Bachman, 1982; Grotjahn, 1987), but the computer-assisted response analysis problems illustrated here provide a new argument for their value and suggest that some deletion rationales may be more useful (e.g., Hale, Stansfield, Rock, Hicks, Butler, and Oller, 1990) than others. Items should be selected on the basis of the interpretation of the total test score. Moreover, some items produce more informative data than others. Testing researchers already examine characteristics of words on vocabulary tests (e.g., Perkins and Linville, 1987); we need to apply and extend this type of research to help define rational criteria which simultaneously help to define score meaning and facilitate principled response analysis (Embretson, 1985).

We need to implement principled response analysis using word-parsing algorithms designed (for different types of words) on the basis of empirical investigation of responses. Regardless of the multiple abilities test takers

Table 2 : Credit Lost for Partial Vocabulary Scores

Errors	Credit Lost	Example
None	-0	diseases (# 35)
Misspelling	-1	deseases (# 35) (ok = diseases)
Inflectional error	-2	disease (# 35) (ok = diseases)
Derivational error (innovation)*	-2	rejuvenized (# 24) (ok = rejuvenated)
Semantic or combinatory** error	-3	spray (# 54) (ok = spread)
Derivational error (grammatically incorrect)	-3	installing (# 22) (ok = installation)

* Creates a "new" word using English morphemic rules.
** Fits semantically but not syntactically (Boland & Tanenhaus, 1991)

use on gap-completion tests, their constructed response is the word. Therefore, any information we will gain will come from word analysis; the more systematic this analysis is the greater the progress will be toward understanding one-word test responses and ultimately toward analyzing the words comprising multiple-word test responses.

Table 3 : Responses Indicating Aspects of Vocabulary Knowledge

Incorrect, Incomplete, or Unanalyzed Knowledge	Observable Error	Examples
Orthographic	Misspelling	diseses (# 35) (ok = diseases)
Morphemic	Inflectional error	disease (# 35) (ok = diseases)
Incorrect but analyzed morphemic*	Derivational error	rejuvenized (# 24) (ok = rejuvenated)
Combinatory**	Combinatory error	respond (# 53) (ok = resist)
Semantic	Semantic precision	spray (# 54) (ok = spread)
Derivational morphemic	Derivational error	installing (# 22) (ok = installation)

* Creates a "new" word using English morphemic rules.
** Fits semantically but not syntactically (Boland & Tanenhaus, 1991)

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ASSESSING THE EFFECTIVENESS OF REAL-TIME COMPUTER-ASSISTED CLASSROOM DISCUSSION: WRITING IMPROVEMENT IN TWO GERMAN PROGRAMS

DOROTHY CHUN

ABSTRACT

This paper examines the writing competence of first-year German students who have participated

The assessment criteria will be twofold: 1) linguistic ability, i.e., grammatical accuracy and syntactic complexity will be charted, and 2) discourse competence, e.g., ability to initiate, expand upon, and defend an argument will be examined. In a previous study of the program which focuses on communicative proficiency, I found CACD to be an effective method for increasing the interactive competence of first-year German learners because it provides students with the opportunity to generate and initiate different kinds of discourse, e.g., they ask more questions of fellow students as well as (occasionally) of the teacher, they suggest new topics, they give feedback to others, and they request clarification when they haven't understood someone else. Fort hist study, the data from the program with a greater stress on grammar provide an interesting comparison with regard to students' linguistic and discourse competence in writing German, and CACD will be shown to play an important role in improving writing.

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EVALUATING THE SCIENCE THAT COULD NOT BE ASSESSED (LOOKING BACK TO GO AHEAD)

MICHELANGELO CONOSCENTI

> *What happens when a new work of art is created is something that happens simultaneously to all the works of art which preceded it. The existing monuments form an ideal order among themselves, which is modified by the introduction of the new (the really new) work of art among them... The past should be altered by the present as much as the present is directed by the past.*
>
> T.S. Eliot. *"Tradition and the Individual Talent"*

HOW FAR CAN WE GO?

In the last few years, general awareness of Computer Assisted Language Learning, CALL, has measurably increased. A quick glance at the bibliographies will reveal all manner of new applications, of new media presented to the public, often tested, often critiqued. There is ample discussion of method and evaluation. But there is something also strangely missing amidst all this discovery and innovation, an inexplicable gap: there seems to be no history.

Why? Most researchers and developers would agree that CALL is a branch of Linguistics, Applied Linguistics to be more precise. Linguistics has always suffered a certain lack of identity. The scientific community has and continues to consider it a discipline rather than a science. The difference between the two terms is fundamental, let us consider the definition given by the dictionary:

Discipline: 1) training, esp. of the mind and character, to produce self-control, habits of obedience. 2) the result of such training; order kept (e.g. among schoolchildren, soldiers). 3) set of rules for conduct; methods by which training may be given. 4) branch of knowledge; set of instruction.

Science: knowledge arranged in an orderly manner, esp. knowledge obtained by observation and testing of facts; pursuit of such knowledge. *"Science is an exact discipline."*

A discipline is then an attempt to maintain order in a certain area, to accept a set of rules that help explain evidence of events, facts, or phenomena. As soon as we can clearly identify this area and grant the coherence of results obtained by our observations, testing, we master the discipline and produce *science.* There is still a further and much more important difference between a discipline and a science. Science, because of its nature, is subject to a continuous revision by means of two fundamentals disciplines: epistemology and history of the science. It is not by chance that science and epistemology share, in ancient Greek, the same root (epistimi). In modern languages only German retained the same root, Wissenschaft (science) and Wissenschaftslehre (epistemology). Therefore we can say that when a discipline is strong enough to support a constant monitoring of its achievements, generating a discussion of its ideas (an epistemology of that discipline) and a reflection on what have been its previous experiences (a history of that science), that discipline is, at least, attempting to become a science. Saussure was well aware of this situation and his dream, as Simone (1992) pointed out, was to provide Linguistics with means typical of the so called "hard sciences", to make linguists realize its limits and goals. One of the means was to provide a "History of Linguistics." In spite of our efforts and ambitions Linguistics is still a discipline or, at best, a "soft science."

If we consider CALL, it has all the characteristics of a discipline. In the past years we have been trying to understand the object of our discipline, testing, experimenting with some of the new opportunities we where given, without considering a fundamental question: how far can we go ignoring a proper assessment of what technology can do for us? This question leads to the other fundamental question: *Is there a need for a "History of CALL?"*

The most important fact is that we are now trying to understand what would be a suitable way of assessing the work done, either in the past or in the present. When a discipline, acknowledged as such, starts to explore its history we are sure that it is settling a problem of identity. This entails a more important fact, a need for historical perspective points out a fundamental change, from the phase of individual initiatives to the building of a satisfactory and sound theoretical framework. Till now we have been mainly experimenting with technology applied to our field, but the impressive amount of studies produced is what Piaget (1968:51) calls the "internal epistemology" of the science, which is surely usefulness because it helps to summarize: It is a retroactive critique of the concepts, methods, and principles used up to that point in a manner that determines the value of any given field as *knowledge* ("sou mettre à une critique rétroactive les concepts, méthodes ou principes utilisés jusque-là de manière à déterminer leur valeur epistémologique elle même"), but this is not enough.

CALL has already undergone several extremely important changes. The first stage was CAI, the first discipline saw computers applied to teaching. Then we discovered CALL (we will see later what I mean by "discovery"), where the focus was on learner and learning processes.

Not by coincidence alone, the presence of the linguist during the different stages of courseware development has increased. As soon as linguists laid hands on the field questions arose: One of the most important was: "Who is a CALL expert?". The reason for such a question is very simple. There were plenty of linguists interested in CALL, but not so many were computer literate. The result was that being a linguist able to "maneuver" with a computer seemed enough to be reckoned a CALL expert. Nonetheless, this phase, with all its pioneering and now naive looking experiments was of enormous importance. We learned very quickly that while having technologies was important, it was not by itself enough to produce suitable courseware. Just as we were trying to elaborate reasonable models to be used in the making of our materials, technology ran past us, offering us something newer. Most recently that has been the Graphic User Interface, GUI, which allowed us to develop software with completely different characteristics, with more attention on learner interaction with the program. Then, all of a sudden, multimedia was born and new perspectives emerged; sound and video can now contribute to realize even better products. The next step is probably Intelligent Computer Assisted Language Learning, ICALL, and virtual reality.

I hope that with these few lines I summed up what has been the main theme of our labors in the past, adjusting the "soft idea" of language learning we had to the rapidly evolving technology. This is the main problem with CALL, the pace of the evolving technology is much faster than the pace of linguistics in solving its own questions. As a paradox, IT, "information technology" (as it is called in Europe) has helped us to better focus certain problems of our main discipline (i.e. linguistics), but without allowing us to reflect on these issues. IT has no room for doubts, it just sets the pace!

But we have not to forget that we are children of a "soft science." Now the best thing is recognizing that it is time to stop and to assess what has been done. People who are going to invest in IT have the right to know just how reliable and profitable these techniques are. At the moment the only guarantee we can give is that we know that IT can be used, in many different ways, that many are possible, but that these have not yet all been assessed. Having a look back at what we have done will certainly help us to better understand what to do in the future.

SOME POSSIBLE TASKS FOR A "HISTORY OF CALL"

What I mean by "History of CALL" is not just merely an inventory of software or models produced till now. That would be too superficial; rather than being interested in a reconstruction of final results of our discipline, we should try to identify and understand those cognitive processes that generated these results. Of course this is the final goal of such a work, but "interim" results would be good to know about as well. First of all we have to look at what our history has been, but in the way Kuhn (1962:1) has shown:

> *History, if viewed as a repository for more than anecdote or chronology, could produce a decisive transformation in the image of science by which we are now possessed.*

The only possible way of going ahead is to look back carefully and to try to understand what has generated certain ideas. Epistemology is not enough to reflect on the reasons certain models have been adopted and other rejected. We have to go deeper inside these ideas, trying to understand *why* something happened. Whatever the faults of the discipline may be, it is undeniable that CALL has been expanding vastly around the world. That expansion has not necessarily been linked to the need of linguistics to solve various problems, either theoretical or practical. There have been economic as well as sociological factors involved. The economics of CALL are always close to the highest level of practical awareness. Even the sociology of CALL is implicit in the battles we face in the acceptance of our work in the realities of the educational marketplace. These disciplines can surely help us shape our awareness of the role of CALL. But it is the internal history of our discipline which is still in need of being written. Why? To provide our present work with historical perspective.

It should be safe to assert that the actual software and courseware produced by CALL are the result of ideas available at a given and specific time and place. Software and courseware are the evidence, if you will, the data. The data, properly analyzed, ought to be able to tell us what the theories were from which they emerged. In this scenario, software and courseware would tell us a story of how *theories* produced results. First the eggs are studied to tell us about the chicken; then the chicken is studied to tell us about the eggs. With luck, one theory, well articulated, could (and should) produce very divergent results. Theories are produced to give order to a large body of data: the "one chicken" theory.

It is also possible to assume from experience that all these data, this software and courseware, far from emerging systematically from a coherent theory, have been randomly generated. This is what Hofstadter (1979) has called "an eternal golden braid". If we want to break this particular chain we have then to postulate the existence of an activity which by nature is not purely casual or accidental, but which nonetheless cannot be statically framed into a theory: this is what I previously called *cognitive process*. Our history of CALL should then explain the complex scenarios that generated certain theories, and how practice dynamically influenced these theories in return. All this is furthermore complicated as soon as we recognize that at least three kinds of elements contribute to determining these scenarios: linguistic theory, available technology, and socioeconomic reality: the "many chickens" theory.

If we accept these three main areas as relevant to our discussion we can then make a distinction between what we are observing as evidence and what the evidence is on its own. "Observed," a piece of courseware may be an interesting instance of second-language acquisition theory; "unobserved" it may be a useful learning tool. This means that CALL is not only evolving (as technology is doing), ie., producing new and useful learning tools, but is also giving shape to second language acquisition theory. We have to understand whether some courseware we produced in the past had the particular shape it had because it was the best we could do or because our linguistic framework was not sophisticated enough and was being "disturbed" by the technological side of the problem.

As far as I am concerned we are still modeling the concept of what CALL should be. The fact that terms as CAI or CBT exist shows that the first part of the discipline has been mainly working on the technological side of the problem. On the other hand CALL suggests that we understood we can cope with technology within certain bounds, but what are these bounds? We know that CALL represents many opportunities for us now let us try to formulate some rules for playing the game seriously.

HISTORY OF CALL: SOME KEY QUESTIONS

In order to obtain the maximum benefit from this reflection on the past practice of our discipline, I would suggest, first, to deny the empirical principle that each science has a predetermined object of study the objective existence of which we have to observe. The only problem here would be to elaborate a satisfactory definition of this object. As we said before the occurrence of different areas in determining the object of our study suggests a more differentiated approach to the problem. CALL is in fact a discipline in progress influenced by many variables. Let us only think, given a single technology, about the possible scenarios generated by the available theories on language learning. Then we should consider the socio-economic variables, that means a much more complicate framework. As far as I can see, a suitable way of proceeding could be that we try to understand, as a first step, the way the practice of the discipline shows the path to the science; something similar has been attempted by Fox *et al.* (1992). If this were the case, we would not only formulate theories independent of both Linguistics and Computer Science, we would also find the unique evidence for those theories in our software and courseware, whether that evidence was obvious or hidden, not explicit but implicit in any given scenario. That we have so far *not* undertaken this task is made plain by the absence of a specific language learning theory that considers the interaction between student and computer (see the excellent example of Smith (1988)).

The reasons for this absence may be many. One is the difficulty of each of us to cope with so many different fields: linguistics, computer science, psychology, pedagogy, just to name a few.

If we will proceed in this way we will have a history of CALL that is a history of attempts, successes, and failures, but it will mainly explain why some discoveries never became inventions. Here I am referring to Kuhn (1962: 52) that considers a discovery "a novelty of fact", while an invention is "a novelty of theory".

This is certainly not an easy task. It implies a collaborative approach between researchers, declaring clearly why certain solutions have been taken, aiming at which goal. This will help to establish who, was involved when a particular phenomenon occurred or which kind of theories have been offered to explain this or that. Such a study would explain why a typology of the field would not only link us with the past, but also orientate us towards the future.

LOOKING BACK TO GO AHEAD

Here are some questions I think we should try to answer in order to fix some of the "rules of the game."

Why is present courseware, almost by definition, unsatisfactory?

Is this unsatisfactory level due to the kind of interaction?

What do we mean by interaction?

Is feedback an index of interaction?

What do we mean by feedback?

How does this interaction integrate with foreign language learning theories?

What are learner prerequisites when he / she is involved in IT learning environments?

Which kinds of autonomy do IT learning environments generate?

What do we mean by autonomy?

Does IT change the role of the trainer and learner?

Which kinds of scenarios do we generate in the classroom by means of CALLware?

The pedagogical side of the problem: learner strategies and IT. Do we need a particular language learning theory?

Teacher and learner as researchers: a way to improve software?

The end-user involvement: is the learner represented when the courseware is planned?

CALL and LSP: an area of interest for effective learning?

Technology and linguistic research: towards new models of student interaction?

If we will try to answer these questions keeping in mind this new perspective maybe we can start to seriously reflect on the role of our discipline within Linguistics. This would allow us to stop simply testing how the technology works with the language learning process and consider how to assess the results of our researches and thus to improve their quality.

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DIGITAL VIDEO AND TRACKING IN CALL: USING QUICKTIME AS A RESEARCH TOOL

K. BERND CONRAD

ABSTRACT

Apple Computer's QuickTime™, a software standard for digital video, has major implications for courseware development in computer assisted language learning. The technology has opened new avenues for documentation, annotation, and illustration of content in interactive language learning software.

While the presentation will outline the strength and weaknesses of QuickTime-based digital video in regard to courseware development in CALL, it will focus primarily ont he unique potential the technology holds for conducting second language acquisition and foreign language learning research. There has been widespread agreement that the computer is an efficient tracking tool. Many researchers, Nina Garrett to name one, look to Call in the hope that the extensive data gained from computer-facilitated performance and strategy tracking help to uncover processes of language acquisition. Digital video in the form of the widely available QuickTime offers a new dimension of tracking visually based response recording by a dynamic medium. Because any QuickTime clip occupies a certain active area of the screen and represents digital data on a time-based continuum, it can track learner input in physical and temporal form. Simply put, a clip can be programmed (e.g. in HyperCard) to record where a student's mouse click occurred in the pixel coordinates of the movie screen (precise to 1/72 of an inch for Macintosh monitors) and when (precise to a fraction of a second). Using a variety of examples, the presentation will show how this feature of digital video can be used effectively in CALL-based research and will discuss requirements for incorporating it.

PRESENTER'S BIODATA

Dr. K. Bernd Conrad is Director of the Language Learning Center and assistant professor of German at Northern Arizona University Flagstaff, Arizona. He earned his Ph.D. in Applied Linguistics at the University of Texas. His publications and presentations have on course design and CALL. In addition to the '90, '91, and '92 CALICO symposia he has presented at national ACTFL and AATG meetings. Dr. Conrad's CALL specialization is the development of interactive multimedia materials. His most recent presentation on multimedia technology came at the International AATG meeting in Baden-Baden, Germany, where he introduced a virtual museum project for the study of German and history.

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IMPROVED EFFICIENCY IN COMPUTER-BASED LANGUAGE INSTRUCTION

MARIA COOKS AND PETER HENSTOCK

INTRODUCTION

In the past few years, the application of computers to foreign language education has made much progress. Software has been developed for vocabulary drills, grammar exercises, reading practice, and other aspects of foreign language learning. With the advantages of being tailored to the students' learning speed and needs, such educational software can provide immediate feedback and has been proven to increase the retention and rate of learning. Through advances in ser-interface design, computer courseware has become much more efficient and easier for students to use. However, similar progress has not been made in aspects of instruction of immediate concern to teachers including grading and data entry. The focus this project was to develop a flexible system which is user-friendly for students and instructors alike.

BACKGROUND

The Macintosh Hypercard has traditionally been the preferred environment for foreign language courseware. With its integrated graphics, sound, and foreign language font capability, a wide range of exercises can be implemented. Using the simple script programming language and button-functions, Hypercard has opened the technology to educators without an extensive programming background.

Within a few hours, a computer novice can implement a specific drill including sound and graphics, and this has led to a specific class of mouse-click drills. One example is the use of computer picture dictionaries which have a graphic of a city scene or room of a house containing many different objects. By clicking on the object, the name of the object is presented in the foreign language. Due to the minimal interaction between the computer and the student and the fact that the student is mostly watching the program, the learning benefits of such packages are not particularly high. While mouse-click drills can be used effectively in a specific drill, the Hypercard stack generally has to be completely reprogrammed in order to generate another drill. Using more advanced hypercard programming and employing different data fields rather than fixed pictures, both the variety of the drills and the flexibility can be improved. Many commercial programs have implemented such higher level drills and they are being widely used.

Most commercial programs that can used in conjunction with textbooks are composed of two distinct parts: the instructor's mode for entering data, and the student's mode for learning the material. This approach has some major advantages over the previously described programs. With the variety of textbooks in use, it is obvious that it is impractical to have fixed lessons for a language. In almost all cases, the instructor will need to customize the programs to meet their needs and this can easily done in the instructor's mode. The drills can be entered easily on a daily or weekly basis and adapted to the needs of different levels of students and different textbooks.

Using a separate instructor mode within the program for data entry also has some disadvantages. In order to enter the data, the instructor must be using the input system portion of the program. For some networked labs without external connections, this may often mean that the instructor must come into the laboratory and compete for time with other faculty and perhaps students to enter the data. Unfortunately, many of the programs do not lend themselves to an optimal input method for the data. With the increasing availability of computerized text, scanners, and multimedia data, the ability to port data into the system has not been facilitated by most courseware programs up to this point. One of the primary motivations of this project is to provide a means of means of overcoming such data entry limitations.

THE NEW APPROACH

Our program, "Computer-Based Language Education Tools" is based upon four drills: multiple choice, fill-in-the-blank, matching pairs, and jumbled words. These drills are the most common in textbooks and can be useful with vocabulary, grammar, and more advanced language studies. All of these drills are interactive and make the user type, rather than just click on the answers, to reinforce the learning process. Unlike most of the other programs available, all of the data for the quiz is read in from text files. These files can be produced by word processors, can be generated on IBM computers and transferred to the Macintosh, or can be copied directly from the textbook with the aid of scanners. This allows tremendous flexibility for the instructor and reduces the time required for entering the data. Some innovative features also available but not widely implemented in other programs have been included in the system too. Thus when answering questions, students are often given more than one chance to answer correctly before the solution is given. In many cases, the student may have been able to limit the available answers to just two. In our system, the instructor can specify the number of allowed tries for each of the four drill types so that the students will continually be motivated to answer the questions correctly.

DESCRIPTION OF THE DRILLS

The templates have been design to maximize reading comprehension as a means to enhance writing in a second language by providing a visual environment for topics and allow imitation of a style. Most research done in second language writing points towards a direct link between reading and writing. Better readers acquire a feel for style, thus becoming better writers (Krashen, 1994). Although no well defined methodologies exist for the teaching of style at this level, two of them The Situational Approach and the Communicative Method do answer best for the "building" of skills rather than the "teaching" of skills, which is widely sought in the third and fourth year language courses. Tha situational approach forces the students through total immersion in the target language to simulate a real situation. The situation here being totally linguistic, i.e. the structure of a particular style. By its very nature interaction with a computer is "communicative" and actively engages students in real problem solving situations by distorting the structure of the language through hypermedia.

The templates were designed to mix the properties of the magister and pedagogue modes of teaching as described by John Higgins in "Language, Learners and Computers". The system was used regulary, once a week in the Fall semester as part of a Computer Lab hour that carried 10% of their final grade.

Matching pairs is a vocabulary matching exercise involving two columns of data. Up to seven different pairs can be presented at one time. By allowing seven pairs of data to be presented on one screen this information becomes a schema and one can clarify a concept by breaking it up into stages, or by showing its similarities (synonyms) or differences (antonyms) with other concepts the student may be familiar with. This is consistent with the idea of providing the reader of a second language with an "Advanced Organizer" (Rumelhart 1977) that will act like a filter of new information that would speed up the "bottom-up" processing of the text by accelerating the linkage to the conceptually driven "top-down" processing of information. The visual nature of the template helps to promote understanding not only of new vocabulary, but also of cultural or conceptual differences between construes in different languages.

The multiple choice drill presents the students with one question at a time. Up to five different answers can be provided as choices for the student. These answers can also include responses such as "Two of the Above" or "A and B". Any number of questions in this drill can be allowed and the answers can be anywhere between single words and sentences. As was the case with matching pairs this template is also part of the advanced organizer or pre-reading exercises that would ensure proper understanding of key words, concepts and attitudes vital to an understanding of the text. In this instance thoroughness of understanding is achieved by allowing longer, more difficult sentences in the formulation of the concept.

The next two templates address the issue of transferring the knowledge gained into the reading exercises of the "Advanced Organizer" into the act of writing itself. Authentic texts are typed or scanned into the templates, and the discourse then is segmented into paragraphs or complex sentences while being careful to mantain coherence and structural properties together. There are a variety of techniques to segment a text, the ones used for these exercises being based on James Allen's "Natural Language Understanding" taking into consideration text properties as well as cue phrases.

The fill-in-the-blank exercise consists of a paragraph of text with certain words or phrases replaced by <*1*>, <*2*>, etc., below which the answers are presented in a random order. Students are required to type the word or phrase into the correct answer field. Any number of blanks can be used in a given sentence and up to six can be used for a given paragraph of text. Using the format of a paragraph, this quiz can be used to test word relationships, vocabulary, concepts, and grammar and stylistics.

It is particularly useful for testing reading comprehension by allowing students to anticipate answers, a "must" for becoming proficient in second language reading, and for imitating a style by carefully selecting from blanks cue phrases that mark segment boundaries: ending, resuming or digressing ("that is all", "anyway", "by the way").

The jumbled sentence is one of the most powerful drills of this program. It is a test the student's ability to synthesize correct grammatical structure and express conceptual ideas using a given set of words. Due to the complexity of this drill in any language, this exercise has often been used exclusively for simple sentences. We overcame this problem and allow more complex sentences by specifying groups of words by brackets. Rather than a sentence like:

"not train a rather take fly than why"

the instructor can group words such as

<take> <why not> < fly> <a train> <rather than>

The student will then type in the complete sentence in the proper word order without the brackets. If the answer is not correct, the results are automatically appended to a text file which can be analyzed by the instructor at a later time. The purpose of this file is to create a large database of errors commonly made by students which may be useful for future research.

GRADING & SECURITY

In a classroom environment, grade reporting has often been a problematic issue. The requirements for laboratory environments are that students do not have access to the quiz data so they cannot view the correct answers and, that the results of the quizzes be graded and stored in a secure place for the instructor to process later. The goal of this aspect of program development was to create a program which could be used on both fixed machines and over a secure network operated in a laboratory environment.

Commercial programs have addressed security problems in a variety of ways. The primary methods of handling such protected data are encrypting the data, hiding it, and using the protection capabilities of the network. Often, there is a tradeoff between ease of use and the degree of protection, as some systems even restrict access by the instructors. Many of the software educationalpackages create a grade file which needs to be moved into a secure folder by the student. With direct access to their own grade files and sometimes the data files from which the drills come, even though they are encrypted, cracking the code can often be more of a challenge than an obstacle for some students. After the session has been completed, the instructor is left with dozens of files which have to be processed to obtain a useful grade sheet. Later they must be deleted which itself can often be a significant task. With open computer labs, some students may go into the lab earlier and practice the drills before their tests. To prevent this, the instructor must be able to quickly install new data.

Our implementation maintains the security of the data and grades, while making the installation and grading simple. Before the laboratory session begins, the instructor copies a set of previously written quizzes to a folder our program can access but which the students cannot read. The instructor also runs a setup program which is configured for their particular class. This tells the main program which quizzes should be run in a given session, where they can be found, and how many tries they are allowed for a given question. With this quick installation, the instructor can prevent student access to the quiz data and use the program for several different classes or languages by simply switching the data.

The students using the machines log into the particular program by typing their full name and their class, e.g. Spanish 401. The program will use the class name to automatically load the corresponding set of quizzes listed in the setup. Their grades are automatically stored in a file bearing their full name in a secure grades folder to which they do not have access. The students do not even know the location of the files.

After the lab session, the instructor for the class can go into the secure grades folder and there will be a file generated for each student. Rather than processing these files manually one-by-one as some programs do, we have a separate grades routine. It looks for a list of all the students in the class, processes the data, and deletes the students data files. The results are given in an Excel format file containing the names and grades for each quiz in a usable format. The jumbled sentences data is compiled in a growing list of incorrect sentences as mentioned earlier. This approach is effective in an open laboratory environment where nonregistered students may be using the same programs as the regular students. The grades not processed by the grades application can be deleted without confusion.

CONCLUSION

The "Computer-Based Language Education Tools" program was designed to improve upon existing language courseware. Maintaining the flexibility to be used for all levels in conjunction with any textbook, the program is simple for the students to use and designed for efficient operation by instructors. Using a setup program and secure folders, students are prevented from accessing any of the quiz data or grade files. Processing the grades with a separate routine into an Excel file minimizes grade handling by the instructor and is conducive to open labs where extraneous files may be present.

We have used this courseware for the teaching of Business Spanish, a 400-level advanced course that by its very nature, language for special purpose, and its size, 28 students, presented a chanllenge that could not have been met without the help of Computer-Based Language Tools.

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PRESENTERS' BIODATA

Maria Cooks (B.A., Salamanca University, Spain. Ph.D., Purdue University) is Academic Program Administrator for Spanish . She has taught at Woolwich Polytechnical Institute in London, England, Kansas State University and Purdue University. She has published papers on the poets Machado, Hierro, and Brines. Her current interests are contemporary Spanish poetry, the teaching of language for special purposes and computer-aided language instruction.

Peter V. Henstock received his B.S. in Electrical Engineering and Computer Science from the University of California at Berkeley. He received his M.S. in Electrical Engineering from Purdue University and is currently enrolled in the Ph.D. program in Electrical Engineering. He has also been a research assistant in the Department of Foreign Languages and Literatures where he has focused on developing computer applications for language teaching education. He has developed software packages for learning Japanese, Spanish, Chinese, Indonesian, and Tagalog.

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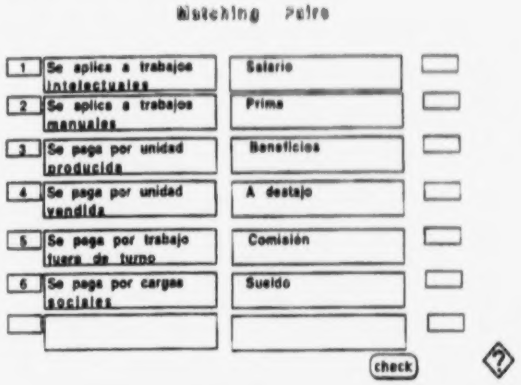
APPENDIX



Matching Pairs

1	Se aplica a trabajos intelectuales	Salario	☐
2	Se aplica a trabajos manuales	Prima	☐
3	Se paga por unidad producida	Beneficios	☐
4	Se paga por unidad vendida	A destajo	☐
5	Se paga por trabajo fuera de turno	Comisión	☐
6	Se paga por cargas sociales	Sueldo	☐
			☐

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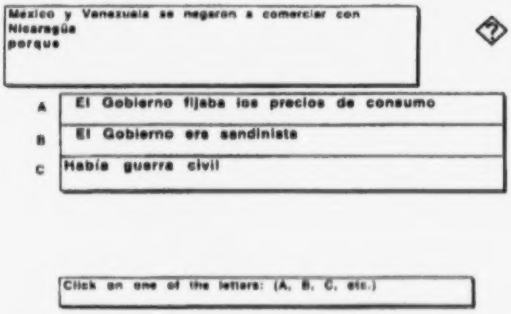
APPENDIX

MATCHING PAIRS
AUTHOR MODE

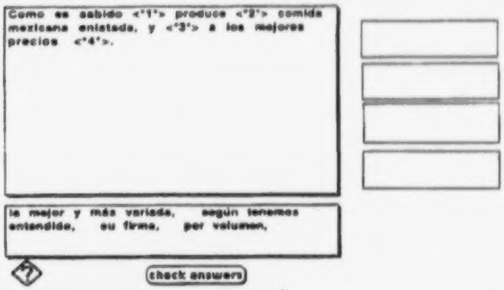
Se aplica a trabajos intelectuales, Sueldo
Se aplica a trabajos manuales, Salario
Se paga por unidad producida, A destajo
Se paga por unidad vendida, Comisión
Se paga por trabajo fuera de turno, Prima
Se paga por cargas sociales, Beneficios

Representación Colectiva de obreros, Sindicatos
Paro total de trabajo, Huelga
Destrucción de maquinaria, Sabotaje
Trabajador temporal durante una huelga, Esquirol
Intermediario sin recomend. ni mandato, Mediador
Intermediario con recomendaciones, Conciliador
Intermediario con recomend. y mandato, Arbitro


México y Venezuela se negaron a comerciar con
Nicaragüa
porque

A El Gobierno fijaba los precios de consumo
B El Gobierno era sandinista
C Había guerra civil

Click on one of the letters: (A, B, C, etc.)


Como es sabido <'1'> produce <'2'> comida mexicana enlatada, y <'3'> a los mejores precios <'4'>.

la mejor y más variada, según tenemos entendido, su firma, por volumen,

FILL-IN-TEXT
AUTHOR MODE

Acabamos <de abrir> varias tiendas <en esa> ciudad para vender <alimentos> mexicanos y puertorriqueños <de alta calidad> a todos nuestros clientes.

Como es sabido <su firma> produce <la mejor y más variada> comida mexicana enlatada, y <según tenemos entendido> a los mejores precios <por volumen>.

Por lo tanto, les agradeceremos <se sirvan indicarnos> a la mayor <brevedad posible> los precios de las siguientes <mercancías> y los costos de <los seguros y flete>.

También <nos interesa recibir> el último catálogo <de toda su gama de> productos <así como> alguna información sobre los descuentos, <condiciones de pago> y devoluciones.

En espera de <su pronta contestación>, quedamos <de ustedes>, muy <atentamente> Jordan's Delicatessen Inc.

MULTIPLE CHOICE
AUTHOR MODE

La Revolución Sandinista en Nicaragüa estableció una economía con control
estatal
1) Mixto
2) *Absoluto
3) Libre

Hoy en día Nicaragüa es el país más pobre de este Hemisferio después de
1) El Salvador
2) Cuba
3) *Haití

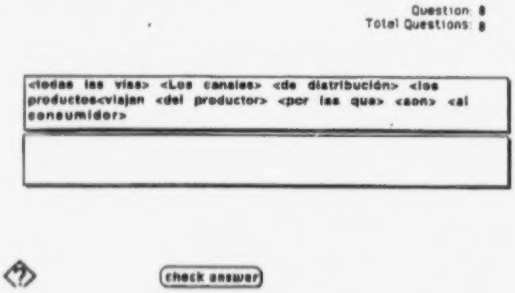
México y Venezuela se negaron a comerciar con Nicaragüa porque
1) El Gobierno era sandinista
2) * El Gobierno fijaba los precios de consumo
3) Había guerra civil

Una de las exportaciones de Nicaragüa es
1) Comida Procesada
2) *Carne de res
3) Vehículos

La Presidenta de Nicaragüa debe primero
1) Fomentar la economía
2) *Solucionar el problema político
3) Atraer inversionistas extranjeros

El problema económico mayor de Panama es que tiene
1) Una economía muy poco diversificada
2) *Una economía sin ninguna diversificación
3) Una economía muy diversificada

La causa de la fuga de capital de los bancos panameños
1) *Fue consecuencia de las sanciones económicas de EE.UU.
3) Fue consecuencia de las drogas


Question: 8
Total Questions: 8

<todas las vías> <Los canales> <de distribución> <los productos<viajan <del productor> <por las que> <son> <al consumidor>

JUMBLED TEXT
AUTHOR MODE

<LLos canales> <de distribución> <son> <todas las vías> <por las que> <los productos<viajan <del productor> <al consumidor>.
<LLa función principal> <de estos canales> <es facilitar> <la distribución del producto> <reduciendo> <el número de transacciones> <y así se reduce también> <el costo del mismo>.
<EEl mayorista> <de estanterías> <tiene> <sus propios> <estantes> <y los aprovisiona periódicamente> <con sus productos>.
<LLa cantidad> <que paga> <el consumidor> <por un producto> <se llama> <precio de mercado>.
<EEl precio> <que el fabricante> <cotiza> <a los clientes> <se llama> <precio de catálogo> <y suele ser> <el precio máximo> <de producto>.
<SSi se quiere saber> <el saldo anual> <de existencias> <hay que hacer> <un inventario>.
<EEl inventario permanente> <consiste en> <el registro> <de las entradas> <y salidas> <en el momento> <de efectuarse>.
<HHoy día> <la informática> <facilita enormemente> <el control del> <inventario> <que es> <una de la áreas de> <la administración empresarial>.

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LINKS AROUND THE GLOBE

DAVID CROOKALL

ABSTRACT

This session will be a presentation of Project IDEALS, with ample time for questions and answers. Project IDEALS brings together several areas:

- cross-cultural communication (including language learning and international understanding),
- computer literacy (including word-process),
- telecommunications technologies (using Internet for interactive connections from around the world),
- experiential learning methodology (a 7-week simulation/game),
- professional skills development (for example, leadership, team work, decision making),
- environmental issues (such as the resources of the oceans),
- student teams situated round the world (currently Japan, USA, UK, Netherlands, Austria, Hong Kong, Russia, Latvia, Estonia, Canada, Germany).

Project IDEALS provides a computer-mediated learning environment, in which student teams from around the world engage in negotiations in order to draw up the text of an international treaty. Teams communicate with each other using telecommunications and specialized software. Typically, some 25,000 lines of text will be exchanged among a dozen teams during a 7-week simulation. It is the substance of the simulation, rather than the technology, which is the focus of student activity. It is, however, the technology which allows it to happen. Project IDEALS stands for Promoting an International Dimension in Education via Active Learning and Simulation, and is supported by the Fund for the Improvement of Postsecondary Education (FIPSE).

The presentation will be fully illustrated with overhead projector slides, and the audience will be given ample opportunity to look at previous messages and to ask questions.

PRESENTER'S BIODATA

David Crookall specializes in experiential learning at the University of Alabama, where he also directs Project IDEALS and edits *Simulation & Gaming: An International Journal of Theory, Design, and Research*. One of his main interests is computerized simulation (about which he has authored several articles). He is past president of the International Simulation and Gaming Association. he has lived in five countries in three continents, and is bilingual (English and French).

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"HI! I COMMUNICATE"
ASSESSMENT OF THE IMPLEMENTATION OF SPEECH ACTS IN CALL

WILFRIED DECOO

INTRODUCTION

This presentation is not meant to give a publicitary demonstration of new CALL-programs, but, as the theme of the conference requires, to assess. In our search for aspects to be assessed, we should not be afraid to probe into fundamental questions. CALL deals in the first place with language teaching and learning, especially second or foreign language learning (for this presentation we will not make a difference between the two). With some 12,000 scientific articles per year now on second language learning, worldwide, there is a fair amount of assessment going around. Many aspects of this assessment could also apply to CALL, but do not always find the right channels nor the people able to make time for it. The CALL-community, ourselves at Didascalia Research Center included, is often more involved in production than in assessment - in order to answer the ever-increasing demands for CALL-materials.

Still, the application of evaluation to CALL needs to grow and ripen. We choose a fairly difficult subject to study, the place of the widely quoted concept of speech acts with relation to CALL.

"Speech act theory" comes to us from analytical philosophy, when J.L. Austin published his *How do to things with words* in 1962. With his book *Speech acts* of 1969, J.R. Searle became the second important name in the founding of the concept. In it's more than thirty years history, the concept of *speech acts* has surfaced in almost all human sciences, including second language learning.

In this presentation we will first try to give a basic definition of *speech act* as action concept, as opposed to *utterance*, and briefly recall the major questions: are speech acts universal or not? How can they be organized if at all possible? How can we draw the relations between speech acts and utterances? This will lead to a first working definition of *speech acts* adapted to our concrete needs.

The next step brings us to the application of such defined speech acts in second language teaching and learning, a process which started in the early seventies. Two major points of criticism are often mentioned in connection with this application (whether or not in the form of functional-notional approaches):

- first, the "atomization" of speech acts, whereby the inventories of speech acts do not account for the complexity of connected discourse;
- secondly, the lack of didactic systematization in the choice and ordering of speech acts with an eye to a coherent learning process.

In spite of these criticisms, "communicative" methods - or at least methods bearing that label - have flourished. But the problems have accumulated. In the words of Philip Riley:

> *To put it bluntly, we may know what we want to teach, but we do not have much idea of how to go about it: the present jumble of simulations, role-plays, games, dramatic techniques, etc. is no substitute for a principled approach to sensitization, presentation, practice, acquisition and use, even if such activities seem, intuitively, to be somehow "more communicative"* (Riley, 1982).

There is a need therefore for didactic frameworks to implement speech acts in more coherent communicative approaches (which we consciously put in the plural). This need has become greater since "drill and practice" exercises, or purely lexical and grammatical training have become somewhat suspect, whether justified or not. But even if we can revalorize these traditional training forms, even to the point of becoming "communicative", we cannot deny the need to train speech acts within communicative situations.

CALL also needs such didactic frameworks. The development towards more interactive systems, the addition of speech, the push towards "authenticity", the implementation of natural dialogues in cultural settings, all these elements show that CALL is navigating in ever deeper waters. Do we have proper maps to identify our course?

TOWARDS A DIDACTIC TAXONOMY OF SPEECH ACTS

Outside the semantic framework, which is a formidable variable on its own, but for which already many workable taxonomies exist, we would try to identify the "didactemes" of speech acts, i.e. the teachable and learnable units. In the taxonomy we would discern two forms and three dimensions.

Two forms: mediated versus natural speech acts:

- mediated speech acts are used as a medium in the second language classroom or in a CALL-environment, for learning, training or testing purposes;

- natural speech acts occur in every day life, stemming from our direct communicative needs. The relation between mediated and natural speech acts should be carefully evaluated.

Three dimensions: we try to overcome the didactic problem of connected discourse, which is in essence the problem of the quantification of speech acts, by introducing the concepts of micro-, meso- and macro-speech acts.

- Micro-speech acts are situated on the sentence-level. They are realizations of notions in a syntactic relation, although a one-word sentence like *Bonjour* belongs to the same category. Most examples in functional-notional lists are micro-speech acts: *greeting, congratulating, comparing, indicating.*

- Meso-speech acts: a combination of micro-speech acts can lead to a thematically bound situation, in a mediated form if created for didactic purposes. Communicative exercises in the sense of "Who are you?" or "How do you feel?" or "Asking for and giving information about public transport" can be examples of meso-speech acts. The didactic platform, however, will in many cases be lexical or grammatical. It is vital that we dare to recognize the connections between lexicogrammatical progression in second language learning and thematic situations. "Communicative approaches" have often violated these connections.

- Macro-speech acts break out of the circle of a lexically or grammatically defined input. They globalize fairly high amounts of micro-speech acts without thematic limitation. They are grounded on our concepts, thoughts, needs, etc., usually outside a didactic setup. They are free conversations, exposés, texts, articles. Learners experience these macro-speech acts receptively when reading texts. In a productive way, macro-speech acts can surface in a didactic context when learners reach the final goals of our pedagogical endeavor.

We thus come to six basic combinations, which, to a certain extent, represent a progression in the learning process from "lower" to "higher" speech acts:

- mediated micro-speech acts
- natural micro-speech acts
- mediated meso-speech acts
- natural meso-speech acts
- mediated macro-speech acts
- natural macro-speech acts

DIDACTIC IMPLEMENTATION AND VALUE OF MEDIATED SPEECH ACTS IN RELATION TO CALL

By its very nature, CALL deals with mediated speech acts. The transfer to the various counterparts in natural speech acts is a dynamic process which surpasses the aims of this presentation. Here we focus on the didactic platform.

Mediated micro-speech acts

Mediated micro-speech acts are, no doubt, the most widely used in language learning in general and in CALL in particular. But, maybe because of their frequency and their non-situational nature, they have also been widely depreciated by proponents of the "higher forms". We probably should reevaluate the impact and function of micro-speech acts in CALL-programs. It is not because amateur-programs draw widely on micro-speech acts that they should be abandoned at all in the more sophisticated software-packages.

An example of the implementation of micro-speech acts in a wider didactic CALL-environment is the database with "semantic reply-forms" which we have used for our lexical programs in various languages. The principle of external versatility allows to combine at will double micro-speech acts (basic connected discourse, usually question & answer) into chronological, morphological or semantic lessons. Thousands of combinations are possible. Especially the semantic combination results in units that bring micro-speech acts of one field together, thus forming a basis for meso-speech acts.

Mediated meso-speech acts

Mediated meso-speech acts form fundamental communicative units. We would suggest the following criteria for their successful implementation into CALL:

- a clear inventarization of the micro-speech acts needed to create a meso-speech act; didactic efficiency requires us to be aware of the components, so as to avoid the "wild creation" of all kinds of communicative situations without an eye to the vital lexical and grammatical parts that need to be integrated as well.

- an evaluation of the content: Is the subject worthwhile? Could it be authentic? How does it fit into a large semantic taxonomy to be implemented over the full learning process (in order to avoid boring repetition or standstill in the traditional communicative themes - such as asking directions or making a reservation)

- a clear identification of the learning strategies: it is especially here that CALL-research needs to expand. It seems that strategies are often chosen and implemented, based on personal feelings of how learning proceeds or on the possibilities of the programmer. A full view on learning strategies, however, implies taking into account various language user's levels - e.g. repetitive, operative, creative - and possible man-machine interaction forms. The identification of the strategy would thus include aspects such as

    - the initial focus of the assignment: to read on the screen, to look for visual prompts, to listen, or a combination of the preceding

    - the medium to present the assignment: mother tongue, foreign language, visuals, or a combination of the preceding

    - the expected mental activity of the learner: recognition, repetition, identification, directed convergent production, directed divergent production, creative convergent production, creative divergent production

    - the expected observable activity of the learner: to watch, to indicate, to listen, to read, to speak, to write

    - the expected observable activity of the computer: to generate questions, MC-items, TF-items, Cloze; to provide help; to correct and remediate, etc.

    - the number of participants: although our traditional view limits CALL to one participant, some strategies can include two or more learners in the same process

Mediated macro-speech acts

Mediated macro-speech acts in CALL have a different function. Whereas micro- and meso-speech acts clearly proceed in a bottom-up direction, macro-speech acts, at least in a still didactic setting, will in most cases require a top-down approach. Learners can read or view full scale documents, whether texts or films, but which were not created at first for learning. CALL-users can now question the program on any level of explanation needed, including clarifying micro-speech acts which abound in any macro-speech act. Examples of such approaches can be found in the more sophisticated CALL-programs, like interactive video using authentic materials as its base.

But especially here we need to evaluate the didactic impact of the program. There is the risk that the global document, with all its richness and authenticity, does not match the fundamental needs of the learner. Macro-speech acts may tend to crunch the didactemes. After having worked through the program, learners may find them asking: what is the place and the value of what I learned in the total spectrum of my progression in second language?

CONCLUSION

A didactic taxonomy of speech acts - as we tried to define one - is not meant to give a final answer to the categorization of our activities. It is much more a touchstone for the didactic systematization of CALL-materials. An efficient learning process asks that we know where we stand in the total spectrum, even if one only adds a tiny brick to the wall.

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LESSONS FROM ALICE-CHAN: APPLYING NLP TO THE AUTHORING AND EXECUTION OF EXERCISES IN JAPANESE

DAVID A. EVANS AND LORI S. LEVIN

INTRODUCTION

The ALICE-chan[1] project at Carnegie Mellon University (CMU) has developed a language-training environment for Japanese that uses natural-language processing (NLP) as a basis both for assisting instructors in preparing exercises and for evaluating student responses to exercises. In this work, we have had the opportunity to assess NLP as a tool in an intelligent computer-assisted language-instruction (ICALI) system. We have been concerned especially with the problem of making NLP accessible to language instructors and using NLP selectively to render it effective for learner's-language analysis. In this paper, we report our observations and evaluations of the effectiveness of NLP in the ALICE-chan system.

SYSTEM DESCRIPTION

The long-term goal of the ALICE project is to develop multi-media foreign-language workstations that support many different language-related activities. (Cf. Evans & Levin 1990; Levin et al. 1991; Levin, Evans & Gates 1991.) In the special case of ALICE-chan, we have focused on two related tasks: (1) developing the basic NLP capabilities for error analysis and correction, covering as much as possible of a first-year Japanese curriculum and (2) creating a teacher-authoring/student-exercise environment (interface), in which language exercises and other resources can be developed and used.

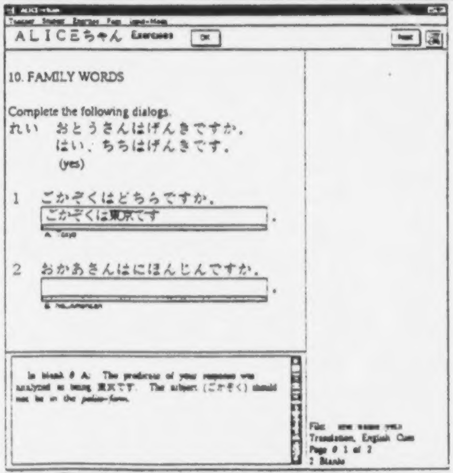
One of the guiding principles in ALICE-chan design is that users--teachers or students--should not have to know about linguistics or NLP to use the system. Thus, despite the fact that ALICE-chan itself is "linguistically sophisticated", this sophistication remains for the most part hidden from the user. Both teachers and student users can reap the full benefits of the system with no more linguistic knowledge than that which is typically presented in beginning-level Japanese textbooks.

Another important feature of ALICE-chan is that it is an *environment* containing a number of resources; it is not a programmed curriculum. The resources are Japanese text-editing facilities, an authoring system, an on-line dictionary, and a student exercise system. The user can move freely among these resources. There is no set sequence or curriculum that a student or teacher must follow. We do not, however, rule out the possibility of adding a curriculum authoring (and delivery) system in the future. This would allow the teacher to orchestrate a sequence of student activities, possibly constituting the "backbone" of a language class.

Another principle that guided our design is that students and authors should not have to learn a programming-language-like notation to use the system. All parts of the ALICE-chan system are accessed through an easy-to-use graphical user interface (GUI). Except for situations that call for writing text, all interactions with the system can be carried out through menus and dialog boxes that are manipulated easily using a mouse, or, alternatively, through simple keyboard commands.

Example of an ALICE-chan Exercise

Figure 1 shows an ALICE-chan exercise in which the student must type a short sentence in response to a question. Student answers can be entered in *kanji*, *katakana*, *hiragana*, or *romaji*. When the student clicks the "OK" button at the top of the screen, the answer is sent to the NLP programs which analyze the student's words or sentences and automatically generate feedback. In Figure 1 the student has answered the first question and has received feedback at the bottom of the screen indicating that it is not correct to use the polite form, *gokazoku* (family), in reference to one's own family.[2]



10. FAMILY WORDS

Complete the following dialogs.

れい　おとうさんはげんきですか。
　　　はい、ちちはげんきです。
　　　(yes)

1　ごかぞくはどちらですか。
ごかぞくは東京です

2　おかあさんはにほんじんですか。

In blank # A: The predicate of your response was analyzed as being 東京です. The subject (ごかぞく) should not be in the polite-form.

Page # 1 of 2
2 Blanks

Figure 1: An Exercise in ALICE-chan

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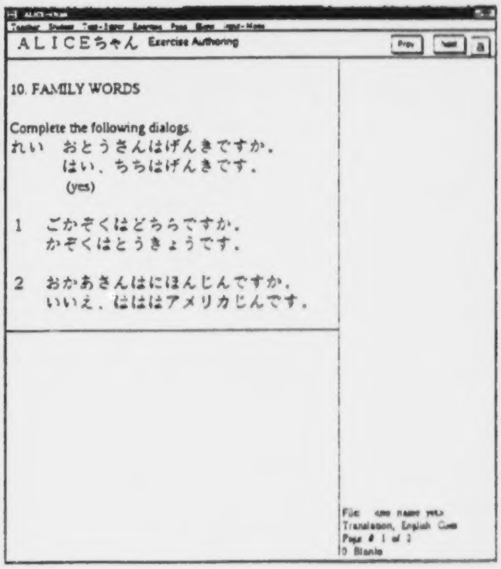
In addition to the example shown here, many other types of errors can be detected by the NLP components of ALICE-chan. These include use of *no* with a stative verb (and many other errors involving particles that violate a verb's requirements), use of *ni* with types of time adverbials that do not require it (**kinou ni simasita* ("did it yesterday")), use of *no* after a prenominal adjective or determiner (**akai no hon* ("red book") and **konna no hon* ("that kind of book")). Other errors that are detected are incorrect negation of adjectives (e.g., **takai desita* ("was expensive")); use of a past adverb with a non-past predicate and vice versa (e.g., **asita simasita* ("did it tomorrow")); etc. The system also detects problems that are context sensitive, i.e., constructions or lexical choices that are incorrect in the context of the exercise even if they could be grammatical in another context. This includes obligatoriness or optionality of various parts of a sentence and usage of tense, aspect, negation, *ga* and *wa*, markers of formality, and honorifics.

The ALICE-chan NLP components are capable of processing sentences that are typical of a first-year Japanese course. The parser can currently analyze mono-clausal sentences consisting of a main verbal, nominal, or adjectival predicate and any number of nominal or adjectival phrases. The nominal and adjectival phrases can be arguments or adjuncts of the main predicate. Processing of particles is robust in that (1) the parser will not fail if the particles are wrong or missing, but will make a best guess at what was intended and (2) alternations of *ga* and *o* with *wa* and *mo* are recognized. Noun phrase coverage includes possessive noun phrases, adjectival modifiers, and simple coordinate noun phrases. The parser can also analyze some complex sentence types involving gerund clauses and sentential modifiers of nouns (relative clauses). Morphological coverage includes negation of verbs, nouns, and adjectives; honorifics; many gerund-plus-auxiliary constructions; passive and causative verbs; numbers and number-plus-classifier phrases; desiderative verbs; potential verbs; and other phenomena. An NLP lexicon of about 1,500 words provides lexical information to the parser and morphological analyzer.

ALICE-chan can also deliver cloze, translation, and transformation exercises. Exercises may vary along certain parameters: fill-in-the-blank or multiple choice; test mode (without feedback) or feedback mode; and English cues or no English cues.

Exercise Authoring

Figures 2 and 3 show some of the steps involved in authoring an exercise. The first step in constructing an exercise is to enter a text into the ALICE-chan text editor (Figure 2), which provides full text editing capabilities in *kanji*, *hiragana*, *katakana*, and *romaji*. The text is next read into the authoring system (Figure 3), where the author makes it into an exercise by clicking the mouse on portions of the text that students will be expected to work with in exercises. (Regions are chosen simply by clicking the mouse on the first and last character.) The system then draws a box around the answer and sends it to the NLP programs. The NLP programs automatically analyze the answer and display the analysis at the bottom of the screen (as shown in Figure 3).



10. FAMILY WORDS

Complete the following dialogs.

れい　おとうさんはげんきですか。
　　　はい、ちちはげんきです。
　　　(yes)

1　ごかぞくはどちらですか。
　　かぞくはとうきょうです。

2　おかあさんはにほんじんですか。
　　いいえ、ははアメリカじんです。

File: <no name yet>
Translation, English Cues
Page # 1 of 2
0 Blanks

Figure 2: Text Editing in ALICE-chan

The NLP analysis of the author's answer is stored as part of the exercise and compared to the analysis of the student's answer during error detection. Any mismatches in the analyses of the author and student answers will be pointed out to the student as shown in Figure 1.[3] The teacher may optionally edit the NLP analysis to increase or restrict the range of student answers that will be accepted. For example, the tag "REQ" (required) associated with most of the features and constituents in Figure 3 can be toggled to "OPT" (optional) or "ILL" (illegal). It is also possible to add more particles (e.g., to add *ga* as an alternative to *wa*) or to add alternative lexical items.

EVALUATION

Potential Strengths of NLP

NLP has the potential to enhance the performance of CALI systems. Even systems that are based principally on "pattern-matching" technologies would potentially benefit from, say, automatic morphological analysis of elements in pat-

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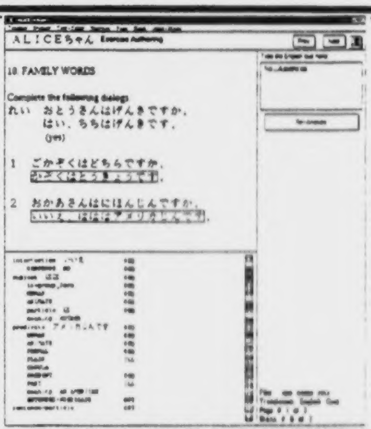

10. FAMILY WORDS

Complete the following dialog:

れい　おとうさんはげんきですか。
　　　はい、ちちはげんきです。
　　　(yes)

1　ごかぞくはどちらですか。

2　おかあさんはにほんじんですか。

Figure 3: Authoring an Exercise in ALICE-chan

terms. We can identify several features of (I)CALI systems that can be targeted for improved performance under NLP and we can evaluate ALICE-chan on these points.

Automation: In theory, NLP can assist the author in getting better results with less work, since the author does not have to specify wrong answers and feedback for each exercise. As ALICE-chan illustrates, it is possible to design a system in which the author only has to mouse the correct answer to send it to NLP for analysis. The system provides detailed feedback on a wide range of errors automatically. Because the author can also optionally edit the authored parse, flexibility is guaranteed. In the authored parse, right and wrong answers are characterized, not merely listed, so error-types can be targeted.

Better Error Detection and Feedback: In an NLP-based system, error detection is supported by general knowledge of the language as encoded in a parser or other NLP components. In principle, therefore, one can expect better error detection than in systems where detection is based on a list of specified wrong answers or a pattern matcher having no linguistic knowledge. "Better" performance, of course, will be measured relative to specific applications. ALICE-chan demonstrates flexibility in matching different right and wrong answers; accurate diagnosis and feedback; and ability to cover many types or instances of errors.

Natural Conversational Interaction: If some degree of natural language understanding is provided, the system should be able to engage in meaningful conversational exchanges with the student or should be able to judge the appropriateness of a student's response in a given situation. ALICE-chan does not currently generate conversational responses. However, the appropriateness of student responses can be determined by comparing specific pragmatic features (e.g., formality, politeness) to the authored parse.

Potential Weaknesses of NLP: NLP has been problematic in many systems because of the difficulty in creating required resources (lexicons, grammars) and in controlling and interpreting the output of the NLP process. Such problems must be understood to be circumvented in practical applications.

Incomplete Coverage: Complete NLP is not possible for any language, given current technology. Even in apparently restricted applications, there will always be sentences that an NLP system will not be able to process correctly. In ALICE-chan, though we have restricted coverage to first-year Japanese, our coverage is consistent and complete for the classes of phenomena we expect to encounter. One consequence of using a restricted sublanguage is that processing can be very robust and some types of ambiguities can be avoided. Another consequence, however, is that, in order to use the system effectively, users (in particular, authors) need to be aware of the limits of coverage.

Ambiguity: Since NLP systems do not have complete control of semantics, pragmatics, and situational factors, they cannot resolve ambiguity very well. When ambiguity is not limited, a process (such as error analysis) must consider potentially many parses when only one will seem appropriate to a user. Excess parses will also lead to loss of speed and accuracy. Of course, ambiguity interacts with grammatical coverage: more constructions in a grammar lead to more opportunities for ambiguity. In ALICE-chan, we have done our best to avoid spurious ambiguities. Inevitable ambiguities are resolved interactively with the user. However, in balancing ambiguity with coverage, we have made some restrictions that authors have to learn.

Ease of Use for Non-Linguists: Systems based on NLP lose their comparative advantages if they can only be used by computational linguists. It is important that teachers be able to use NLP-based systems easily and effectively. In ALICE-chan, we automate all NLP processing and limit the points of contact between the user and the system. The user must interact with the system to resolve inevitable ambiguities–via "ambiguity resolution dialogs"–and the author has the opportunity to modify the NLP analyses of sentences being prepared for exercises (as illustrated in Figure 3). The interactions are designed to be intuitive; the author does not have to understand the workings of NLP; and they are implemented in a GUI so that the user does not need to use special notation or a programming language.

Size and Speed: NLP-based systems are often too large to be portable or useful on "small" machines and too slow for real-time interaction. ALICE-chan runs in real time on a Unix workstation; the most recent version of the system is being designed for use on a 486-based PC.

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Practical Evaluations

It is naturally difficult to evaluate a system such as ALICE-chan while it is undergoing development; the utility and efficacy of the complete system may not be reflected in the performance of incomplete components. However, we have attempted to assess the design and function of facets of ALICE-chan even during development stages.

Several of our evaluations are essentially *informal*: we have considered (1) the alternative approaches to similar problems (e.g., authoring; error spotting and correction) that have been taken in other systems and (2) the ease with which the system is adapted to new problem types. On these points, ALICE-chan seems to score well. One important evaluation, to date, however, is *formal*: one of our associates, Noriko Nagata, has based her dissertation work on ALICE-chan processing. We elaborate on the Nagata study, briefly, in the following section.

Nagata Dissertation Study

Noriko Nagata's (1992) recently completed dissertation at the University of Pittsburgh, Department of Educational Technology, focused on the evaluation of the ALICE-chan system and NLP-based processes. Her work involved using an early version of ALICE-chan to deliver lessons to a large number of students (N=34) in intense training sessions. She obtained clear results showing improved learning of targeted linguistic phenomena (viz., grammatical relations such as the use of correct particles with passive verbs). Nagata developed a comprehensive grammar, vocabulary, and exercises for the target phenomenon and adapted ALICE-chan processing into a mini-system that, in its prototype form, demonstrates that NLP can be effectively used for processing responses to exercises and for training students. The following summary elaborates on Nagata's work.

For her dissertation research, Nagata focused on the special question of whether qualitatively-improved and linguistically-based feedback on errors would improve learning. Such feedback is possible only if a system is capable of analyzing student productions accurately. Such a system must be able to recognize both grammatical and "errorful" responses. To approach this problem, Nagata designed and implemented a prototype lesson for a unit of study in Japanese, using the ALICE-chan NLP kernel as an "intelligent" computer-assisted language instruction (ICALI) environment. (Note that the environment represented a subset of ALICE-chan functions: it focused on only one ambitious exercise type and it did not utilize authoring or the current ALICE-chan interface.)

To address the scientific (empirical) question of the effect of improved error analysis on learning, Nagata designed an experiment involving 34 students in a second-year Japanese class, focusing on a grammatical phenomenon (the *passive*) that the students had not yet encountered in their course work. She created two 17 - student groups for the evaluation by pairing students according to ability (based on a pretest) and then assigning paired-partners to opposite groups at random. As an additional control on what the students experienced, *both* groups were given the same computer-assisted lessons and were required to respond to the same computer-administered 'situated' exercises, requiring that they write complete-sentence responses in a minimal dialog.

In order to do this and still preserve the essential variable—the quality and amount of feedback—Nagata created a second CALI system, again using kernel ALICE-chan functions, to simulate traditional computer-assisted language instruction (TCALI). In fact, the TCALI system that Nagata produced has essentially the power of the PLATO system (Hart 1991, *inter alia*), so the quality of its error analysis and responsiveness is quite high. The critical difference between the ICALI and TCALI systems is that the NLP component of the ICALI system affords it the ability to spot and explain errors that reflect clause-level grammatical relations. This is not possible in TCALI systems. One student group, thus, worked exclusively with the ICALI system, the other exclusively with the TCALI system. Each student spent approximately four hours (over four sessions) working on exercises; all student and system responses were recorded. A post-experiment questionnaire confirmed that no students were aware of the differences between the two systems.

Nagata evaluated the results of the instruction by giving all students a post-test (on the *passive*) immediately after the last CALI sessions. The ICALI group performed significantly better, especially on problems involving *verbs* and *corresponding particles*. A follow-up test, six weeks after the post-test, demonstrated the persistence of the effect: the ICALI group performed significantly better, especially, again, on the targeted *grammatical relations*.

Nagata's work is remarkable in several respects. First, her development of an effective ICALI exercise stands on its own as a noteworthy accomplishment. She has clearly demonstrated the practical use of NLP as a tool in foreign-language instruction. Second, her experiment is the first of its kind in (1) contrasting alternative approaches to CALI and (2) evaluating the effects on learning of a critical variable in ICALI feedback.

Nagata's work also demonstrates the power of the ALICE-chan system and the soundness of its design. The ALICE-chan kernel processors were adapted easily to the design of both the ICALI and TCALI systems. Students worked intensely—

and were deeply engaged--with the system for four days; there were no system problems; students asked for more exercises when the experiment ended; the critical linguistic phenomenon was successfully taught.

CONCLUSION

In the development of the ALICE Project (of which ALICE-chan is a language-specific system), we have stressed the selective use of general computational-linguistic technologies along with domain- and language-specific strategies to facilitate many functions. These range from support for specific tasks such as exercise authoring, exercise delivery, error detection, and essay writing to support for using extended resources such as video, language corpora, and situated examples of linguistic phenomena. The ALICE-chan system illustrates a unique integration of general NLP components with both authoring and exercise evaluation (including error analysis) in an ICALI environment. We believe that ALICE-chan demonstrates the feasibility of using NLP to support functions such as exercise authoring and error analysis, empowering the instructor and challenging the student.

ACKNOWLEDGMENTS

ALICE-chan reflects the hard work and dedication of the ALICE-chan development team, including Steve Handerson, Keiko Horiguchi, Chris Scarpinatto, Martin Thurn, and Deepa Varma. ALICE-chan development has been supported, in part, by a contract from the National Cryptologic School (NCS). The authors and members of the ALICE-chan team have benefited greatly from the insightful criticisms and evaluations of ALICE-chan by the Japanese-language instructors at the NCS.

NOTES

[1] "ALICE" is an acronym for "Automated Language-Instruction/Curriculum Environment"; "-chan" is a diminutive suffix in Japanese.

[2] The Japanese reads, "Example. Is your father well? Yes, my father is well. 1. Where is your family? Family is in Tokyo. 2. Is your mother Japanese?"

[3] In addition to the errors that are detected by matching author and student answers, other errors are detected by general error detection routines in the NLP software.

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THE GENESIS AND EVOLUTION OF "LIBRA", AN INSTRUCTIONAL AUTHORING ENVIRONMENT

MICHAEL FARRIS

ABSTRACT

This presentation will focus on the genesis and evolution of an authoring interface for developing "hyperactive" programs for the Macintosh using HyperCard 2.1™. The authoring interface is called "Libra, and was developed with the assistance of a grant from the Fund for the Improvement of Postsecondary education. The original intent for creating Libra was to develop a "mundanely useful" set of authoring tolls, implemented as stacks in HyperCard 2.1, for producing an interactive video programs using listening comprehension strategies. As the development effort matured it became obvious that Libra could and did handle a wider variation in instructional structures than just "listening comprehension" objectives. Libra strength became its ability to simplify the construction of associative links between student actions and desired events defined by the author.

"Libra" was designed to be an interface layered over HyperCard object-oriented and event-driven environment, and to facilitate the construction of instructional displays and the creation of the various types of linking required for interactive instructional structures, such as choice lists, choice dialogues, hyperactive text, and contextual adjustments to lesson navigation and behavior. One of the primary purposes of "Libra" is to alleviate the scripting and authoring demands necessary to produce these types of sophisticated linking constructs and interactions.

The development of Libra required initial consultation with novice as well as experienced users of computer-based instructional authoring, intermediate testing of the interface with the project team, and extensive "beta-testing" with a selected group of users. Throughout all the various evaluations, the questions were: 1) "Is the authoring interface transparent, unobtrusive and intuitive?", 2)"Are the objects defined by Libra adequate for the various instructional requirements of the author?", 3)"Does Libra meet the expected requirements of authoring systems in general?" and 4)"What decisions will be required to keep current with technological and pedagogical changes?"

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USING INTERACTIVE VIDEO TO IMPROVE COMMUNICATIVE COMPETENCE IN ESL STUDENTS

ECHO FARROW

INTRODUCTION

This presentation has two main purposes--to introduce the HyperCard programming of an interactive videodisc program and to discuss the pedagogical rationale behind the content of that program. My desire is that this presentation will appeal to both the programmer and the teacher and thus fulfill both of those purposes at one time. The presentation will encompass the following items:

a. the rationale behind this program
b. an outline and short presentation of the program as a whole
c. pertinence of the program to programmers and teachers alike
d. programming techniques
e. pedagogical consideration
f. the marriage of programmer and teacher
g. assessment

Rationale

In order to explain my reasoning for this program, I must begin with my background. I am currently a graduate student at Brigham Young University in the Teaching English as a Second Language certificate program. While I was working on my Linguistics B.A., I also began studying HyperCard. As my classes continued, my love for this programming tool grew. Eventually I began working in the Macintosh lab for the humanities department at BYU. Last summer I "fell into" a chance to work on a project using "The Story of English" and began the process that I still continue today. My desire to spend the last year working on this project is also because of my love for the subject matter, ESL. I have traveled to local and regional ESL conferences, and I have yet to find thorough, useful ESL programs. I didn't want my program to be a clone of all the other work done before. I have tried to integrate all of the ESL skills--listening/speaking, reading/writing, vocabulary, grammar, and culture. The result, then, of my computer interest and ESL love is this program.

OVERVIEW

The particular section of "The Story of English" I chose to use is entitled "Pioneers, O Pioneers." It is the story of the American west; of the railroad and Mark Twain, of riverboat gamblers and gold prospectors, of cowboys and Indians, of fur trappers and the founding fathers. The story also includes immigrants and their movement into the U.S. through Ellis Island as they came to seek a new life and new hope. The realities of their assimilation and isolation are mentioned. All of this brings up rich cultural information that is especially applicable to an ESL student. The dialogues of the real-life characters are full of standard and non-standard English speech and bursting with slang and idioms.

The students can choose any of the above main categories, play games associated with the text of those categories, look at the script of each segment and learn definitions of given vocabulary words, watch the video in segments or line by line, go to a dictionary that shows pictures and definitions for words, or study culture points about the segments. These segments will be described later.

PROGRAMMERS AND TEACHERS

One of the major problems encountered by any teacher who has a great idea for a program that will aid students is finding a person who can make that program. One of the problems for programmers who have a talent and skill is finding someone who has a specific need (and funding!) for that programming. This presentation can't solve all those problems, but it does bring up an interesting point. That is that programmers will be more effective if they understand something about the content material of a program. And teachers will have tutorials that better suits their needs if they are aware of the variety of feats computers can perform. So this presentation is for the programmers who love HyperCard and for the teachers who love to learn more about ways to teach different aspects of ESL.

PROGRAMMING

The presentation will cover a number of different programming techniques. An outline and brief description of the topics to be addressed follows.

Using multi-stacks

One of the great advantages of this technique is that information can be centralized. All scripts can be placed in one stack and accessed from other stacks by using handlers. Also, one stack can be the resource stack for sound, one for pictures, etc. This cuts down on the size of any individual stack.

Videodisc

Interactive video is one of the greatest ways to put across any teaching point. There are certain XCMD's that come with a HyperCard Developer's license that are necessary for connecting the computer commands with the videodisc player. There are also differences between handling CAV discs, those that are put together is framed segments, and CLV discs, those that are made of second-long segments. These commands will be discussed as well.

ResEdit

This resource allows for adding resources into a stack. Sound, color pictures, graphics, icons, fonts, etc. can all be additional parts of a stack through ResEdit. There are other ways to put resources into a stack; SoundEdit 5.0 has a built-in system of saving sounds as resources, but ResEdit is an all inclusive way to handle stack resources.

Using QuickImage, I took screen shots of "The Story of English," corresponding to each of the segments the students see. Then, using ResEdit, I installed these pictures as resources in my program. The result is color pictures in HyperCard. The same effect can be achieved by using the screen shots as files instead of as resources. One easy script can then bring color into programming.

Sound

Adding sound is easy. But a fun way to use sound--and the lack of sound--is to get that sound straight off of the videodisc. The videodisc will allow sound to be played through one audio track or the other or both. The sound can be turned off, leaving just the picture. Or the picture can be turned off, leaving just the sound. Through manipulating the machine, even new pedagogical tools can be discovered.

Palettes

I used palettes to help "clean up" the segment of the program where the student interacts with the videodisc script. Palettes are easily made through the PaletteMaker in HyperCard's Power Tools. These palettes allow for many things to be accomplished with one script.

Games

There is a number of games in the program that work because of a variety of scripts and XCMD's. An explanation of these scripts as well as handouts of some public domain scripting techniques used will be available.

Menu bar manipulation

Custom menu bars can be made that allow you to control what the user can and can't do.

PEDAGOGY

In ESL there are five basic divisions--Listening/Speaking, Reading/Writing, Grammar, Vocabulary, and Culture. The program deals with each of these in different ways.

Listening

The portion where the students have the opportunity to see part of the script as well as watch the video is part of the listening framework. But that is very passive listening. Active listening is also necessary to help the student improve listening skills. There is a section of the program on dictation. Lines from the videodisc are played, then the students type in what they hear. The computer checks their spelling and punctuation as well as correct words. Then the students can check their answers by seeing what they wrote and what they should have written. Another section is picture identification which works on discriminate listening. The students hear a phrase then see three very similar pictures. They must then choose which picture corresponds with the sentence they heard.

Speaking

There is a section where the student hears words, phrases, and sentences from the disc. The student can then speak that into the computer and have it played back as well as the original phrase. This helps with pronunciation and listening. Also, during the culture section that will be explained below, the students have an opportunity to tell stories and experiences to lab assistants, roommates, friends, or family.

Reading

The whole program involves reading directions and reading words that lead them to be able to practice the next segments. This brings up the fact that this program deals with many different levels of ESL learners. Some sections drive them to try harder, some sections are reviews, and some sections are things to shoot for further down the line in their learning.

Writing

Again, in the culture segment, students are given a number of small essays to write for their classes based on their feelings about subjects brought out in the program and experiences that are similar to the people in the program.

Grammar

A large part of grammar in this program is taught deductively. However, there is a segment called "Scrambles" that allows the students to see a sentence taken from the disc and rearrange words into the sentence. There are also cloze exercises where the students must put the proper words in the proper place. And there are crossword puzzles and word search puzzles that are divided by part of speech. Finally, there are sentences where certain words must be identified by part of speech.

Vocabulary

The script segments of the program teach the students different vocabulary words. These same vocabulary words are recycled in the puzzles and word games. Also, there is a game based on synonyms where certain words fall from the top of the screen. The student hears the word as it falls, and they must choose the number that corresponds with its synonym by typing it on the computer before the word hits the bottom. The number of words to be dealt with increases and the speed at which the word falls decreases as the student works through levels.

Culture

The segments themselves teach the students about different pieces of American culture from Buffalo Bill to the immigrants who came through Ellis Island. With each segment there are options to work on culture points, questions, discussions, and essays. The culture points outline background for each of the segments. The questions ask the students questions about their feelings in relation to the content of the segments as well as how their experiences are similar or different to those discussed in the segments. This is important as the culture of the students is just as valid as the new culture that the student is encountering in America. The discussions ask students the same questions but ask them to discuss these feelings with roommates or the lab assistants or a friend or family. The focus is speaking here. And the essays ask the students to write essays on these subjects, with the focus being writing.

ASSESSMENT

The end of the presentation will be an assessment of how the program seems to break down into levels, what the students are most interested in, what they hated, what they think helps the most, and what skills are and can be worked on and improved using this program. As this paper was written before the program was tested and the assessment made, no results will be given here.

CONCLUSION

This presentation shows how using interactive video can help produce better materials to help ESL students improve their listening, speaking, reading, writing, grammar, vocabulary, and culture skills. The presentation also shows how teachers need to be aware of what computers can do and that programmers need to be aware of what teachers need in order to fully integrate the skills and talents of these two groups of professionals to produce programs that aid students.

PRESENTER'S BIODATA

Echo Farrow is working toward Linguistics B.A. and TESL M.A. at Brigham Young University. Employed by Macintosh Lab in BYU's Humanities Research Center and as a computer programmer for BYU's English Language Center.

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FORMATIVE EVALUATION FOR AN ENABLING TECHNOLOGY: THE CASE OF "IN THE FRENCH BODY"

CAROLYN FIDELMAN

ABSTRACT

The innovative features of the recently completed videodisc packages *In The French Body* and *In The German Body* had a very important influence on the formative evaluation of this FIPSE-funded project. Apart from testing the accuracy and user-friendliness of the software or the effectiveness and appeal of the video material, testing the new learning goals inherent in its design was and continues to be a challenge. The available foreign language proficiency tests indicate that some of the skills taught using these materials and approach are not a part of current language teaching. This chicken-and-egg situation comes about because the new interactive video technologies enable the teaching of the visual components of real-time communication. Up to this time, efforts to teach these components were seriously hindered by the lack of materials and methodology. Consequently, no proficiency tests have been developed for these skills. In this session, the speaker will discuss the two-fold assessment employed during the three years of this project. Of more general interest will be the methods used to evaluate the software and video; of unique interest will be the development of test instruments for nonverbal decoding and encoding proficiency. The speaker will provide background on the materials and approach for teaching verbal and nonverbal skills in a foreign language, as well.

PRESENTER'S BIODATA

Carolyn Fidelman - Project Director *In The French Body,* Univ. of Mass. at Boston. French language teacher at the postsecondary level for 18 years. Graduate Program Coordinator, MIT Media Laboratory. 5 years developing multimedia learning for clients such as IBM. Ed.M. Interactive Technology, Harvard, '88, M.Ed., Foreign Language Ed., Univ. of Georgia '78, A.B. French, Univ of Georgia '74.

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THE EFFECTIVENESS OF INTERACTIVE VIDEO PROGRAMS IN THE FRENCH CLASSROOM

ROBERT FISCHER

ABSTRACT

With the support of the Fund for the Improvement of Postsecondary Education, the presenter has developed listening comprehension interactive video programs using "Libra," an authoring system for the Macintosh. These interactive video programs formed the basis of a carefully controlled experimental design which focused on the instructional value of the programs. The presenter will discuss the design of the programs and the results of the analysis of concrete student performance and attitudinal data which determine the extent of the effectiveness of the interactive video programs.

PRESENTER'S BIODATA

Robert Fischer is Associate Professor of French and Linguistics at Southwest Texas State University. His primary research interests lie in Applied Linguistics and CALL/IAV design issues.

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SPANISH PARTNER

KARL W. FISHER

COURSEWARE FAIR DEMONSTRATION

Demonstration of the Spanish tutorial software that has been developed at Vanderbilt University. The lessons, which provide error specific feedback, are for first year college Spanish courses. Spanish Partner will be comercially available from McGraw-Hill in the fall of 1992.

PRESENTER'S BIODATA

Karl W. Fisher, Assistant Director, Vanderbilt University Language Lab, Lecturer in Spanish, Vanderbilt University, MAT Spanish, UNC Chapel Hill, 1985.

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INTERACTION BETWEEN A COMPUTER AND A VIDEODISC

JURGEN FROEHLICH

ABSTRACT

This presentation will be an interactive video demonstration. A Macintosh computer software program will drive and control a video disc containing the "Three Penny Opera" by B. Brecht.

At the start, I will present and outline the pedagogical reasons for the design of the computer program. I will then demonstrate the application of the program.

In my discussion, I will focus attention on three primary aspects of the program: the learning of the foreign (i.e. German) language, the study of cinematographic elements, and the examination of the Brechtian theory of the theater. My presentation, therefore, would be of interest to foreign language instructors, concentrators of film land media studies, and teachers of literature.

The presentation will discuss the application of the program both in the laboratory and in the classroom, as well as the generic value of the program for other languages and programs on video disc. An opportunity for hands-on experience will be provided.

PRESENTER'S BIODATA

Jurgen Froehlich, Ph.D. University of California 1973, is Associate Professor of German and Director of the Foreign Language Multimedia Center at Pomona College, Claremont, CA. Mr. Froehlich has published articles in journals in the U.S. and abroad, and presented papers on media-aided instruction in foreign languages at numerous conferences. He has recently been awarded a grant from the IBM/Sloan Project. At Pomona College, Professor Froehlich is the coordinator of the IBM-sponsored LLAMA Consortium, whose main focus is "the development and curricular integration of multimedia computer software to help teach foreign languages."

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INTEGRATING DIFFERENT APPROACHES TO ASSESSMENT

NINA GARRETT

ABSTRACT

The evaluation most commonly meant by "assessment" in CALL is of the efficacy of technology use, but the literature on the topic suggests that this is problematic, both because of weaknesses inherent in methods-comparison research and because the use of technology is not a method. Computer-adaptive testing of student performance is equally problematic, in that overall language proficiency is difficult to judge as a unitary trait. This paper will suggest that we should be using technology to assess much wider variety of phenomena - including the effectiveness of non-technology-based pedagogy, the relationships between students' activities in class and on-line, and the fit between particular kinds of software and/or lesson design and individual learner characteristics -- and that this broader assessment context will provide a more valid framework for efficacy research and student testing.

More important, we should work towards a coherent, theoretically motivated understanding of the whole enterprise. All our evaluation attempts are governed by some theory of language learning, though these are seldom explicit, and we cannot arrive at a principled assessment of our assessment studies without considering whether their underlying theories are sound and relevant to the issues they purport to address -- and eventually compatible with more general theories. I suggest that the capacity of our technology to collect and organize data on how learners go about learning is as yet vastly underappreciated, and that we could use it to build far more detailed and sophisticated assessment instruments than are as yet common.

PRESENTER'S BIODATA

Nina Garrett is Associate Professor of Second Language Acquisition and Technology in the Department of Foreign Languages and Literatures at George Mason University. Her teaching and publications focus on the development of SLA theory and its integration with FL teaching and technology. She is currently developing a technology center for language learning and research at GMU.

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"DO I KNOW THIS WORD?" A CALL DESIGN FOR SELF-ACCESSED VOCABULARY

ROBIN GOODFELLOW

ABSTRACT

Developments in Information Technology have given us increased confidence in the appropriateness of 'self-access' approaches to the learning of foreign languages. Self-access learning implies some determination by the learner of learning goals and strategy, so a key process in the approach is self-assessment, by which the 2 are related. Traditional self-assessment techniques, however, suffer either from too much subjectivity or too little individualization. IT in general, and assessment the means to become more objective, without losing its relevance to the individual. This is done by basing the interaction between learner and system on an explicit model of a new learning content is selected and integrated with old, and to the scope of the performance required from the learner and the feedback required from the system, both of which demonstrate that learning is taking place. An experimental design has been developed, for the self-access learning of vocabulary, based on the selection of lexical items from text, and their association in the learner's mind by features of similarity and co-occurrence. Self-assessment is supported by a testing procedure which explicitly uses the associations the learner has made to select target items and generate feedback. The refinement of the design into a viable CALL system is an iterative process during which both the design and the underlying learning model are adapted according to insights gained from observation of learners using the evolving system to achieve their learning goals.

BIODATA STATEMENT

Robin Goodfellow is a research student at The Open University in the United Kingdom.

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PRODUCING HYPERMEDIA SOFTWARE ON CD-ROM: NEXUS-LEX AN ENGLISH - CHINESE REFERENCE TOOL

SCOTT HART, R. KENT WOOD, AND CHARLES STODDARD

ABSTRACT

NEXUS-LEX is a hypermedia lexicon with approximately seven-thousand of the most common Chinese characters. The software is pressed onto a single CD-ROM disc that can be run from Amiga, Macintosh and MD-DOS platforms.

Users are able to look up a character, or combination of characters in Chinese by typing the romanization or the number of strokes for the character. When the word has been located, the character is displayed at the top of the screen, the romanization and stroke count are displayed at the center and the english translation is displayed at the bottom. The user will hear a digital recording of the correct pronunciation for each word which may be repeated as many times as needed. The user may also print the information for later reference. Certain words are supplemented with photographs or full motion video as disc space allows.

The presentation that we propose will begin with a demonstration of the software followed by an assessment of the developmental process associated with it, including programming, data entry, cross-platform conversions, pre-mastering and mastering costs, time lines and funding sources.

Reseachers at the Utah State University lab were faced with many unique challenges in the development of this multi-platform software. The intent of this presentation is to advise others who may wish to develop a similar project of the pitfalls along the way and the solutions to them. This information is critical for an accurate estimation of the costs of producing such a disk.

PRESENTERS' BIODATA

Scott A. Hart is a doctoral student and research associate at Utah State University; a graduate of D.L.I. and recent national 1st place winner of an educational programming contest by Commodore Business Machines.

R. Kent Wood, Professor and Coordinator of the laboratory for Experimental Study of Instuction (LESIN), Department of Instructional Technology at Utah State University.

Charles Stoddard, Ph.D., has spent over 15 years teaching and participating in instructional design activities.

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DEVELOPMENT AND EVALUATION OF A COMPUTER-ASSISTED READING SYSTEM FOR TECHNICAL JAPANESE

KAZUMI HATASA, ATSUSHI FUKADA, CHIEKO KANOU, HIROHUMI YAMAMOTO

ABSTRACT

A new system to help learners of Japanese read technical Japanese has been developed as an international collaborative research project. In addition to basic help functions like kanji help and vocabulary help, the more sophisticated help functions have been implemented: show skeleton, reference, display structure, show modifier/scope. "Show skeleton" highlights the basic elements of a sentence such as subject, direct object, and predicate. This is useful when a sentence is very long. "References" highlights the part of text which a reference word (e.g., "it" and "that") indicates. "Display structure" lets a learner see where phrase boundaries are in a long sentence along with phrasal translation if requested. "Show modifer/scope" indicates which part is modifying a head noun. In addition, the system provides various quizzes about a passage and full translation of sentences as well as translation of any part of the text.

This system was tested with a group of advanced students participating in the intensive summer program for engineers at MIT. Measures taken for an analysis were student survey, individual interview, system's record on the use of various helps, and classroom observation. The system was primarily used as a part of daily preparation for the students. The preliminary analyses of the results show that students were able to reduce their preparation time. There were differences in the way they used the help functions depending on the students' language abilities and their knowledge of the field that the reading passages dealt with. More detailed analyses are to be presented.

PRESENTER'S BIODATA

Kazumi Hatasa, Assistant Professor of Japanese, Purdue University. Wrote articles in CALICO journals. Developing courseware for Japanese.

Atsushi Fukada, Assistant Professor of Linguistics and Japanese, Nagoya University. Translated "Pragmatics and Natural Language Understanding" (G. Green). Developing courseware for Japanese.

Chieko Kanou, Assistant Professor of Japanese, University of Tsukuba. Wrote articles in the Journal of Japanese Language Teaching. Published several textbooks and supplementary teaching materials.

Hirohumi Yamamoto, Assistant Professor of Japanese, University of Tsukuba. Developing courseware for Japanese.

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CONFIRMATIVE EVALUATION OF TECHNOLOGY-BASED INSTRUCTIONAL MATERIALS

JOSEF HELLEBRANDT AND JAMES D. RUSSELL

INTRODUCTION

The terms "formative evaluation" and "summative evaluation" have received considerable attention in the research literature since their introduction in 1967 (Scriven, 1967). Recent research has focused on different approaches to formative and summative evaluation (Bryson & Cullen, 1984; Flagg, 1990; Morris & Fitz-Gibbon, 1978; Patton, 1986; Prosser, 1984; Rutman, 1980). In spite of the increased sophistication and usefulness of many of these approaches, there remains an uncertainty on the part of many teachers and trainers as to the distinction between various types of evaluations, and to their use for evaluating both learners and instructional materials. Russell and Blake (1988) clarified the distinctions among formative and summative evaluations as the two apply to both learners and instructional materials.

In 1978 Misanchuk proposed using confirmative evaluation as another form of evaluation following formative and summative evaluation. Confirmative evaluation is the process of collecting, examining, and interpreting data and information in order to determine the continuing competence of learners or the continuing effectiveness of instructional materials. It is the logical next step beyond summative evaluation.

As the adjective "confirmative" suggests, the purpose of confirmative evaluation is to "confirm" the continuing worth of instruction or the current competencies of an individual. By administration of criterion-referenced instruments, and observation of learners' performances or products of performance, confirmative evaluation becomes a powerful tool in the instructional process. It allows the evaluator to determine whether learners or materials continue to meet requirements and standards that were specified earlier. Failure to meet requirements may result in modifying or terminating the instruction or in retraining the learner. In education and psychology, terms such as "follow-up studies," "longitudinal studies," and "ex-post-facto studies" have reflected both the existence of related concepts as well as the need for such additional evaluations. In business and industrial training, the concept is often referred to as "maintenance."

Because confirmative evaluation builds upon formative and summative evaluation, each will be reviewed before discussing confirmative evaluation in detail.

FORMATIVE EVALUATION

Formative evaluation of instructional materials (see Figure 1) is usually performed by an instructional developer because this person normally does the necessary revisions. Because materials improvement is the purpose of this evaluation, materials are in prototype form and are presented in small units, with each unit being separately evaluated and revised.

In the formative evaluation of instructional materials, a wide range of evaluative tools are used including tests (pretests, embedded tests, and posttests), questionnaires, and direct observations. Because formative evaluation is often conducted one-on-one or with small groups of learners, personal interviews offer another possibility for collecting qualitative data.

During the formative evaluation of instructional materials, students are usually tested before instruction. The designer then introduces the materials in the sequence in which they would be used in an actual instructional situation. The designer observes the students, noting points of difficulty, and recording the amount of time required to complete the work. Following instruction, students are given another test to determine how much they have learned. In addition to the test data, the instructor relies upon additional evaluative tools and observations to determine the effectiveness of the material. The assumption here is that if students don't perform up to expectations, it is the materials -- not the students -- that are at fault. Revisions may be as simple as modifying a section of text or as complex as reworking the content and sequence of an entire set of materials. The developers may determine that the learners do not have prerequisite skills and may therefore revise the entrance requirements rather than the materials.

SUMMATIVE EVALUATION

The summative evaluation of instructional materials is done after the materials have been developed and under conditions similar to those in which they will actually be used (see Figure 1). In order to avoid bias, individuals external to the development team usually perform this evaluation. The purpose is to determine the effectiveness, efficiency, and value of the materials. In addition to validating the product, the data may be used for promotion and sales of the materials.

During summative evaluation of materials, students are often tested to determine their entry skills. The materials are used as they would be under actual instructional conditions. Then a posttest is administered. Other tools of evaluation, such as attitude measures and questionnaires, may also be used. In a summative evaluation, it should be remembered that the primary purpose is to determine how much the students actually learned from the materials. This is often measured as the difference between learner's pretest and posttest scores. In order for the measurement to be valid, the materials must be in their final form and the learners should be representative of the intended student population. It is assumed that if a majority of the students do not learn, it is the fault of the materials. If the design and formative evaluation are conducted properly, this occurrence is unlikely.

CONFIRMATIVE EVALUATION

The major element which distinguishes confirmative evaluation from summative evaluation is the time factor. Confirmative evaluation of materials takes place after implementation of the instructional materials (See Figure 2). Formative evaluation of materials takes place during development, while summative evaluation of materials takes place soon after development, but before implementation. Confirmative evaluation occurs perhaps six months or a year after development and initial implementation. The scheduling of confirmative evaluation is important. Placing it too soon after a summative evaluation could result in a waste of time and resources since it would replicate the summative evaluation. Conducting it after too many years may be too late. The importance and criticality of the skill is a consideration to make the appropriate and necessary changes. Instruction dealing with the operation of nuclear reactors should be confirmed more frequently than instructions for bank tellers or taxi drivers.

Both the critical and complex nature of the task should influence the scheduling of confirmative evaluation. Confirmative evaluation should be more than an ongoing process. If the instruction is used annually, it may be confirmed during each use. For example, a company has developed instructional materials for training bank tellers. During the confirmative evaluation of the materials, the evaluators determine if the materials are effective and if so recommend them for further use. If the bank regularly hires teller trainees with the same educational background and is determined to provide its customers with the same bank service during the next few years, it may decide to conduct confirmative evaluation yearly. On the other hand, if the instruction is used monthly, confirmative evaluation may be done during every sixth use. If the instruction is not to be repeated, there is no need to do a confirmative evaluation at all.

Figure 1: Characteristics of Formative and Summative Evaluation

	Formative Evaluation	Summative Evaluation
PURPOSE:	for revision: to improve materials and correct errors	to determine effectiveness; for validation/verification
WHAT?	the instructional materials	the instructional materials
WHEN?	during development	after development
WHERE?	simulated instructional environment	actual instructional environment
BY WHOM?	instructional developer or team	external evaluator or team
PROCEDURE	try out with learner(s) and revise	pretest, learners use material under actual conditions, administer posttest, evaluate results
FORM OF MATERIAL	rough draft materials, short units	final form, complete lesson/course
EVALUATION TOOLS	tests, questionnaires, observations, interviews	pretest, posttest, (final exam)
NUMBER/ NATURE OF LEARNERS	small numbers of students having entry behaviors not terminal behaviors	actual audience or many learners
ASSUMPTIONS	if students don't learn, it is fault of the instruction	if students don't learn it is the fault of the instruction

Source: Russell and Blake (1988)

Confirmative Evaluation of Instructional Materials

Figure 2: Characteristics of Confirmative Evaluation

PURPOSE	to determine if the materials still meet the original objectives
WHAT?	the instructional materials
WHEN?	some time after initial implementation of materials
WHERE?	within the actual instructional environment or at outside test site
BY WHOM?	team familiar with development process and unbiased
PROCEDURE	use materials with a representative sample of learners
EVALUATION TOOLS	tests, interviews, attitude scales, observations

Misanchuk (1978) said confirmative evaluation of instructional materials answers the question "Should the product be maintained as is, changed in some way, or discarded completely with or without replacement?" This question can be of crucial importance for decision-making processes in learning centers and language labs. The evaluator should look at the entire environment in which the materials are used including learners as well as administrative staff and/or faculty. The entire evaluation process should be guided by a set of key questions. Are the materials appropriate for the current population? Has the composition of the learners undergone changes in terms of background, age, or ability? Are the materials stable in the sense that they will still be useful in case of changes in the curriculum or policies and procedures of the institution?

It is important to know why once effective instruction using technology-based materials has lost its effectiveness. There might be changes in job requirements due to changes in technology or in procedures. Possibly, the loss of effectiveness may be due to changes in the implementation of the instruction -- carelessness on the part of the instructor or lack of attention to detail. If such changes in the components of the instructional system (learners, conditions, or instruction) occur, then the instructional designer may need to make revisions and subject the instruction to formative and summative evaluation again.

Confirmative evaluation assesses both the quality and the effectiveness of instructional materials used in a particular learning environment. In learning centers, for example, these can range from materials which are computer- and/or video-based to materials that use traditional media formats like audio. Under ideal circumstances, confirmative evaluation should follow a previously-determined time schedule identifying the desired format in terms of scope, personnel, instruments, procedures. Many times, lab directors schedule some form of evaluation, specially when the utilization rate of a particular technology-driven application suffers a dramatic drop.

Who should evaluate the instructional materials in confirmative evaluation? Given the importance of objective and unbiased evaluation, an outside evaluator should collect the data, analyze and interpret them, and draw preliminary conclusions. Furthermore, the evaluator needs to be competent in confirmative evaluation procedures. The person involved in the original design of the materials may be able to identify key components to be evaluated during the confirmative evaluation. If changes are necessary, the designer's experience should facilitate making minimal revisions which will obtain the desired effectiveness of the instruction. Of course, following any revisions, the materials should undergo further formative and summative evaluation.

The role of the evaluator is an important aspect of confirmative evaluation that distinguishes it from both formative and summative evaluation. In order to decide whether or not to continue, modify, or completely discontinue the instruction, Misanchuk (1978) proposed that the evaluator(s) implement facets of both formative and summative evaluation. With regard to the formative element, he suggested that the evaluators be familiar with the development process. However, at the same time, Misanchuk recommended that the evaluators be objective and unbiased which can only be guaranteed if they were not directly involved in the design and development process. Thus, it seems that a team approach may be best suited to satisfy these two requirements. For example, a technology-supported learning center may invite representatives from other centers which utilize similar instructional materials under similar conditions.

The materials should be used with a representative sample of learners. One possibility is to use the materials with a representative population within the school or business environment. A second option is using a representative sample from a similar school or branch of a business. These procedures should be supplemented by efforts to gain additional data from interviews, questionnaires, critical incident reports, observations, and so forth.

Confirmative evaluation employs a wide array of instruments. Given its nature and the various stages of decision-making such as determining whether to continue, to revise or to replace a program, the instruments in confirmative evaluation vary accordingly (Misanchuk, 1978). Let's look at an interactive videodisk program for German students. With regard to the first question whether to continue or discontinue the program, the evaluators probably would use a set of pretests and posttests. If most of the students in a new class show satisfactory results (as compared to previous German classes), the program might be evaluated as meeting its objectives and no further evaluative instruments might be used. However, if the test results are below the expected level, the evaluator might use additional instruments such as interviews, questionnaires, or on-the-job observation. In this step, the evaluator gathers information before deciding to revise the program or to replace the program with another. Confirmative evaluation is very helpful in situations in which the application is found to be still effective, but has a low utilization and acceptance rate. In this case it may be helpful to administer attitude measures, observations, and questionnaires to determine the cause. If the results of this inquiry point to factors like lack of user-friendliness, lack of sufficient software, or even psychological phobia, then this might justify the discontinuation of using that application. In short, traditional achievement measures (pretest and posttest) as well as observation, attitude measures, questionnaires, and interviews can serve as important instruments in dealing with the typical decision-making processes in confirmative evaluation of instructional materials.

SUMMARY

Confirmative evaluation of instructional materials and learners completes a cycle of evaluative steps in order to maintain performance standards of an instructional system. Following some time after formative and summative evaluation, a team of unbiased evaluators uses tools like checklists, interviews, rating scales, and tests to answer two fundamental questions: first, do materials still meet the original objectives; second, have learners maintained their level of competence?

Confirmative evaluation provides continuous quality control and allows organizations like language labs and learning centers to offer effective and valid instruction.

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LATIN AMERICAN DATABASES: TECHNOLOGICAL RESOURCES FOR SCHOLARS IN THE NINETIES

NICOLÁS HERNÁNDEZ

This essay is the condensation of a paper delivered at the 1993 CALICO Conference. It discusses the major international electronic resources available in Latin American area studies. By nature of the field it is an interdisciplinary approach to successful searches on INFO-SOUTH, Univ. of Miami, Latin American Data Base, Univ. of New Mexico, Hispanic American Periodical Index, UCLA, Centro de Informacion Cientifica y Humanistica, Univ. Nacional Autonoma de Mexico, and the online edition of the Handbook of Latin American Studies, Library of Congress.

Though there are other resources of related interest, these were chosen because of the breadth and depth of their coverage of the field, as well as for their relevance to the research and teaching interests of CALICO members. Information for this bibliographic essay is largely the result of sessions and meetings at the XVII International Congress of the Latin American Studies Association held in Los Angeles, California, September 24-27, 1992, for which I am indebted to the key contact persons indicated in the narrative below. I am also pleased to acknowledge the formidable assistance of Edmee Palen-Hernandez, of the School of Information Science and Policy at SUNY-Albany.

In 1990 the University of New Mexico, LADB, the University of Miami, INFO-SOUTH, and the University of California at Los Angeles, HAPI, formed a database consortium on Latin America so as to complement one another in providing comprehensive coverage of the region and field and thus avoid unnecessary duplication.

INFO-SOUTH, LATIN AMERICAN INFORMATION SYSTEM, UNIV. OF MIAMI

INFO-SOUTH was established in 1988 at the University of Miami. It was developed by the North-South Center and the Institute of Interamerican Studies of the Graduate School of International Studies. As of September 1992 there were some 54,000 records in the database, according to Susan Latusynski, its Editor, who also estimated that 12,000 abstracts are added per year. New records are added weekly. The editor reports that the Thesaurus has just been revised.

The scope of this combined bibliographic abstract database and archive is information on the economic, political and social life of Latin America. Material is abstracted from publications published in Latin America, Europe, the United States and now Canada. Journal articles began to be covered in January 1988. Newspapers and news magazines became part of INFO-SOUTH's coverage in July of the same year.

Thesaurus headings of interest to CALICO scholars and others working in language learning and instruction sensu latu might include: Anthropology, linguistics, informatics, computer networks, language instruction, information science, and archives. The Thesaurus lists lead terms in boldface. Further classification includes additional labels: Used For, to provide synonyms which are not valid descriptors themselves; Scope Notes, which clarify how specific the lead term is; Broader Term, Narrower Term and Related Term are self-explanatory.

Each abstract contains 6 to 8 descriptors selected by the analyst who prepares the entry. Navigation of the database is relatively easy to the newcomer to online information services; for the experienced user it is very easy.

Equipment

INFO-SOUTH supports 1200 or 2400 baud transmission, PROCOMM or a similar package is suggested for IBM-compatible computers, MAC240 is suggested for the Macintosh. VT100 emulation is the minimum terminal standard indicated.

Cost

Hourly susbcription is $85.00 per hour, with a $30.00 one-time connection fee. Annual subscription is $800.00. For more information contact Susan Latusynski at (800)752-9567.

LADB, LATIN AMERICAN DATA BASE, UNIV. OF NEW MEXICO

LADB, created in 1985, describes itself as "an electronic news publisher." Its physical appearance at the Latin American Institute of the University of New Mexico is that of an operating newsroom.

LADB issues the following publications: NotiSur, SourceMex, Chronicle of Latin American Economic Affairs, and Central America Update. Each is issued in electronic form weekly, Tuesday, Wednesday, Thursday and Friday respectively. Clients may print their files, manipulate them as they see fit, or--and this is a very powerful option included in the subscription price--generate their own in-house database.

LADB is also available through its "Database susbcription" on TECHNET, a New Mexico subset of INTERNET. LADB offers a free demo account to users interested in the database option. LADB on TECHNET has an annual flat fee of $800.00 for unlimited usage, and a per-minute fee of $1.00, which requires a sign-up charge of $50.00. For more details contact Roma Arellano, Manager, at (800)472-0888.

Moreover, LADB offers a joint-package annual subscription to the four publications and the database for $1,200.00.

LADB crosses over the boundaries of the financial, diplomatic, political and academic worlds with ease, accuracy and elegance. Its range of clients is impressive. As Roma Arellano indicated at the LASA Conference in September of 1992, ":LADB brings to the computer user: combined, summarized and rewritten articles, [it] is an affordable source to mainstream media."

HAPI ONLINE, HISPANIC AMERICAN PERIODICAL INDEX, UCLA

HAPI was conceived in 1975 as a comprehensive indexing survey of scholarship on Latin America as an annual serial publication. It covers all areas of the social sciences and the humanities; pure and technical sciences are excluded. Released in its online version in September of 1991, it contained 160,00 records, with some 9,000 items added annually. HAPI is available in the United States and abroad through TELNET, a subset of INTERNET (it is expected to be available through RLIN in 1993). With an online account on HAPI users are also permitted to search ORION, the UCLA main library catalog, which lists three-million records. UCLA owns one of the most complete research collections in Latin American studies in the world.

The Hapi Thesaurus and Name Authority is the starting point for any successful search of this powerful scholarly resource--whether in print or online. Valid main headings are listed in boldface; however, the Thesaurus does include invalid frequently used headings with appropriate cross references. Entries may have the following subdivisions: Geographical, topical, form subdivisions (bibliography, catalogs, indexes, etc.), and period subdivisions. Main headings of interest to CALICO investigators might include: Automation, information and information theory, language and languages (which range alphabetically from Araucanian language to Zapotec language), bilingualism, linguistics, psycholinguistics, semantics, semiotics, sociolinguistics and translating and interpreting. Similarly, literature is accorded full coverage.

HAPI indexes some 400 major journals published throughout the world. It also contains information on Hispanics in the United States. To access HAPI contact Barbara Valk, Director, at (310)825-0810. Search accounts require a $50.00 start-up charge. There is no monthly fee. Rates are $20.00 per hour usage and connect time; minimum $20.00 charge for any month in which the database is searched. Annual subscription is $800.00 for unlimited use.

CICH, CENTRO DE INFORMACION CIENTIFICA Y HUMANISTICA, UNIV. NACIONAL AUTONOMA DE MEXICO

Octavio Alonso, Secretario Academico, is the key person to obtain information on the products published by CICH. He may be reached at: Centro de Informacion Cientifica y Humanistica, Universidad Nacional Autonoma de Mexico, Lic. Octavio Alonso, Secretario Academico, Apdo. Postal 70-392, 05410 Mexico, D.F. Mexico; by phone, 548-02-08 550-52-15 Ext. 4202; FAX 548-08-58; TELEX 1774523 UNAMME.

CLASE (Citas Latino Americanas en Sociologia y Economia) is an index and database covering journals in the social sciences since 1975. PERIODICA covers science and technology articles appearing in Latin American periodicals since 1977. BIBLAT covers materials since 1980 on Latin American studies produced in Latin America and elsewhere. Of related interest is INFOBILA, which is devoted to library and information science. These services are available through TELEPAC, a telecommunications network in Mexico, and on CD-ROM.

ONLINE EDITION OF THE HANDBOOK OF LATIN AMERICAN STUDIES, LIBRARY OF CONGRESS

The Handbook of Latin American Studies is, without a doubt, the basic tool without which this vibrant and multifaceted interdisciplinary field would be entirely different or even unthinkable.

Published since 1936 by the Hispanic Division of the Library of Congress, it is a comprehensive "annual annotated bibliography of about 5,000 items of scholarly interest, alternating yearly between the social sciences and the humanities," reports Sue Mundell, Senior Assistant to the Editor. The exciting development is that each volume of the Handbook is now produced entirely on computer. Any scholar visiting the Library of Congress has access to the most current updated version, as well as limited retrospective coverage. As of late 1992 this new service of the Hispanic Division averages 2,000 online transactions a day.

Additionally, The Handbook is available, beginning with volume 50, on MARC tape and CD-ROM. The editorial staff anticipates that RLIN (Research Library Group's Research Information Network) and other computer services or libraries would buy the MARC tapes for dissemination to multiple individual users.

Mundell has also indicated that, "NISC :National Information Services Corporation: plans to include the Handbook's database, the Hispanic American Periodicals Index (HAPI) database, and the catalog records of the Univ. of Texas' Benson Latin American Collection on a single CD-ROM under the NISC-DISC title Latin American Studies, Volume I."

The staff of the Handbook envisions the usefulness of automating access to volumes 1-49. However, this would require funding and personnel not currently available. Theoretically, such an enterprise would entail the use of "typesetting tapes for the most recent volumes; for the volumes produced prior to automated typesetting, retrospective conversion would require optical scanning."

To access HAPI contact Barbara Valk, Director, at (310)825-0810. Search accounts require a $50.00 start-up charge. There is no monthly fee. Rates are: $20.00 per hour usage and connect time; minimum $20.00 charge for any month in which the database is searched. Annual subscription is $800.00 for unlimited use. As of March 1st, 1993, HAPI will be available through RLIN on the Citadel system. Additionally, dial-up access is possible for users not on the INTERNET.

CLASE (Citas Latino Americanas en Sociologia y Economia) is an index and database covering journals in the social sciences since 1975. PERIODICA covers science and technology articles appearing in Latin American periodicals since 1977. BIBLAT covers materials since 1980 on Latin American studies produced in Latin America and elsewhere. Of related interest is INFOBILA, which is devoted to library and information science. These services are available through TELEPAC, a telecommunications network in Mexico, on CD-ROM, and on INTERNET.

Pat Ensor indicates that LATIN AMERICANA is the CD-ROM edition of the Latin American Bibliography issued by CICH. LATIN AMERICANA contains all of the above-mentioned products in addition to MEXINV and DESA. In its six databases LATIN AMERICANA contains more than 165,000 records in the CD, representing titles published from 1978 to 1987. Ensor reports an annual price of $995.00 in 1991.

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IT DOESN'T INTERRUPT ME WHEN I'M THINKING - AND YOU DO!

SUE HEWER

INTRODUCTION

Authoring packages which offer text manipulation exercises such as selective gapfilling, cloze and total-cloze, are among the most frequently used software types in foreign language learning in UK secondary schools (Fox J, Matthews A, Matthews C and Rope A 1990). Some course books recommend their use and suggest appropriate applications (Huntley, T 1992). Fully contextualised files have been developed by third parties for other course books (Buckland, D 1991). Fun with Texts (Davies, G 1986) is probably the best known of the packages currently available in the UK (Atkinson T, 1992). Its widespread use is largely based on teachers' hunches about its effectiveness.

The total-cloze software used in the on-going study reported here is Fun with Texts (ibid). This authoring package offers the student 7 different text-manipulation activities, one of which involves complete reconstruction of the text at word level. The evidence which provided the stimulus to the study, and the study itself, are only concerned with the text reconstruction or total-cloze activity, using a previously unseen text which can be up to 18 lines long.

BACKGROUND TO THE STUDY

The study is firmly rooted in the classroom. It grew out of the informal observation of nine 14 - 16 year old *ab initio* learners of Spanish as a foreign language for some 150 hours over a period of 60 weeks. There was a wide range of ability within the group. The students had previously studied French for some 200 hours during a 3 year period. Observation took place in the computer lab and in the classroom as the students utilised the vocabulary and structures which had been incorporated into the computer-based activities. The students were engaged on a 2 year course leading to a public examination at 16+ normally taken after 5 years study. The approach taken in the design of the course materials was based on an information processing model of language learning. The total-cloze activities were developed to give students the opportunity to analyse (Bialystok 1988 as cited in Ellis 1990) and practice using their L2 knowledge within a self-controlled, success-orientated environment where some corrective feedback was available (McLaughlin 1987 and Seliger 1977 as cited in Ellis 1990), before putting that knowledge to purposeful use in communicative tasks away from the computer.

The total-cloze activities formed 25% of the lesson time within the 60 week period and were an integral part of the language learning program leading to the public examination. They frequently involved information transfer. For example, students would study an audio text from which they extracted data necessary to reconstruct the computer-based text.Pictures, diagrams and written texts were also used as stimuli.

Conversations overheard whilst the students were working at the computer indicated the use of a wide range of strategies. The pace of their vocabulary acquisition seemed to be faster than usual. They appeared to be more able to manipulate structures in activities away from the computer than other students of similar age and aptitude at the same stage of L2 learning. The grades which they achieved in their final public examination were above those anticipated for students following a two year course and taking into account their aptitude and previous language learning achievements.

The only difference between the work of these students and students in previous groups was their extensive and integrated use of text manipulation software. An investigation of student activity whilst working with total-cloze software as an integral part of a language learning programme seemed appropriate, therefore, given the widespread use of such software.

PURPOSE OF THE STUDY

The initial purpose of the study is to investigate the range and frequency of use by all students of strategies considered by earlier researchers as characteristic of good language learners. The study is not yet complete and further data has to be collected and existing data analysed. It is hoped to build on the findings by providing indications of how teachers might utilise total-cloze software to help students to develop and use consciously the language learning strategies which the software seems to encourage. It might also prove possible to consider how total-cloze software could be improved to provide feedback to support the development of these strategies, as opposed to helping students to complete the text. The two aims, might not, of course, be mutually exclusive!

TOTAL-CLOZE RESEARCH

An initial search of the literature revealed an evaluation by Johnson (1985) of the use of total-cloze software operating at letter level to develop reading skills in a mother tongue English classroom. She identified 15 categories of linguistic activity with examples which coincided with those observed in use by the group of Spanish learners.

Legenhausen and Wolff (1990) found that German university students of English as a foreign language made use of a large number of highly diversified problem-solving strategies when engaged in a total-cloze activity. They assert that this caused them to activate a high amount of explicit and partly implicit linguistic knowledge which, they assume, is likely to lead to an individual's linguistic knowledge becoming more readily and more variably accessible.

Thume (1992) reports on the extensive and integrated use of total-cloze software with German secondary students of English. He concludes that the use of such software accelerates vocabulary acquisition and encourages long term retention.

LANGUAGE LEARNING STRATEGIES

Taxonomies of language learning strategies found in the literature (Bialystok 1981, Rubin 1981, Wenden and Rubin 1987, and O'Malley and Chamot 1990), suggest that the strategies which total-cloze has the potential to activate are those which tend to be made more use of by successful language learners than by those without a particular aptitude for language learning. The taxonomy developed for use with total-cloze activities includes strategies derived from those taxonomies referred to above. It also includes other strategies which, whilst specific to the software, reflect those used in traditional language learning activities and which had been observed in use during the initial informal observation or identified by students during the pilot phase. At least one occurrence of the use of each strategy was observed during the pilot phase of the study. This phase involved both secondary school students and students in higher education. The taxonomy is wide-ranging to allow for variations in student age, aptitude and motivation and for differences in the nature of the activities themselves.

CATEGORISATION

The taxonomy consists of three major categories, metacognitive, cognitive and social/affective. Each of these categories has a number of subgroups, as shown below.

- Metacognitive (MC) Planning, directed attention, selective attention, self/group management, self/group monitoring, problem identification, self/group evaluation.

- Cognitive (C) Deduction, elaboration, grouping, "inferencing," note taking, reading aloud, resourcing, substitution, summarisation, transfer, translation.

- Social/Affective (S/A) Seeking clarification, co-operation.

Within each subgroup are listed the specific strategies. For example, within the subgroup Inferencing, there are the following specific strategies:

- Using support materials to infer overall meaning of text;
- Using support materials to infer missing words/groups of words;
- Using support materials to infer reason for word rejection by computer;
- Using text already uncovered to infer overall meaning;
- Using text already uncovered to infer missing words/groups of words;
- Using text already uncovered to infer reason for word rejection by computer.

DATA COLLECTION

In order to preserve as far as possible the vital link between the intention and the action, an introspective 'think-aloud' technique was used (Ericsson and Simon 1984 as cited by Hosenfield in Faerch and Kasper 1987).

The students worked in groups of three at the computer. At each workstation there was also a taperecorder with built-in microphone. As individuals in the group thought of a word that they wanted to input, they had to explain their reason to their colleagues. The students were also asked to voice all their thoughts as they went about the task.

In order to facilitate strategy identification and analysis, it was also felt important to gather as much contextual evidence as possible . A utility was added to the software which logged and saved to disc every word input and the time interval between inputs. A full printout of the logged data was made after the session. It is, therefore, possible to match up comments with item input during analysis.

The task which provided the focus for the data collection on which this report is based consists of the reconstruction of an 87 word paragraph of a letter in which the writer describes her free time interests. She included in her letter a sketch of her bedroom which contained clues to the content words in the text. The activity lasted for 30 minutes.

In order to familiarise themselves with the software, students worked on one practice text some days before tackling the data collection text. The text used for the study is 87 words long, of which 56 are discrete items. It was unseen by the students but directly related to the topic area which they were currently studying. Its content was known to the teacher who had undertaken to build in the activity as a practice element in the series of activities which he planned for the topic. The students had received no strategy training.

DATA ANALYSIS

The data analysed so far are provided by 24 students aged 14+ with an average to above average aptitude for language learning. They worked in groups of three.

At this stage of data analysis, the most striking feature is the intensity of practice generated by the activity, with an average of 122.75 linguistic decisions being made within a 30 minute session. The minimal amount of time off-task is also significant, with no evidence of off-task activity from 7 out of the 8 groups. This finding supports the view held by many teachers that this kind of software is highly motivating.

Data Summary

Group	Number of Words Input	MC	C	S/A	Total Strategies
A	107	14	95	16	125
B*	134	22	112	23	157
C*	142	13	110	15	138
D	84	7	86	20	113
E	131	34	91	18	143
F	132	44	117	18	179
G	130	34	121	50	205
H	122	23	97	20	140

* tape distorted at end and some 20 strategies not accounted for

The high incidence of inferencing and substitution strategies suggests that the software gives the opportunity for analysis of existing L2 knowledge. As practice (McLaughin ibid) and the analysis of existing L2 knowledge (Ellis ibid) are considered to be important components in helping students to achieve automization, the evidence is again supportive of teachers' hunches that students exposed to the regular and integrated use of total cloze software benefit in terms of acquisition and automization of L2 knowledge.

CONCLUSION

It is clear from the data derived from the small sample already analysed, from the evidence of the informal observation and from the pilot study, that total-cloze software does stimulate the use of a wide range of useful language learning strategies. This is not in itself surprising as the task set is of a problem-solving nature. However, what is surprising is the number of strategies used and linguistic decisions taken by students within a half hour session at the computer. Equally significant is the very small amount of time off-task.

Evidence of the large number of inferencing and substitution strategies used provides encouragement for the planned use of total-cloze activities within a strategy training scheme. Given the minimal feedback currently offered by the software described here, ie simple rejection of words not found in the text , it might also be appropriate to consider ways of enhancing supporting the software so that corrective feedback in response to erroneous input is available if desired.

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UNITED STATES AIR FORCE ACADEMY COURSEWARE DEMONSTRATION

MAJORS HOFFMAN AND SUTHERLAND

COURSEWARE FAIR DESCRIPTION

The USAFA is currently using this technology in our Language Learning Center as an integral part of our curriculum. The demonstration will show interactive videodisc technology courseware in French, German, Spanish and Russian languages. This demonstration will include the use of a development tool which can be used to quickly create lessons for use in the classroom.

PRESENTERS' BIODATA

Major Hoffman has taught Basic and Intermediate French at the Air Force Academy since June 1991. He has worked in the Language Learning Center at USAFA, developing courseware, giving briefings and tours to visiting representatives from other universities and language institutions. Major Hoffman is currently using interactive videodisc technology in his course curriculum.

Major Sutherland - Arriving at USFA in 1984, Major Sutherland began working with videodisc technology in the stand alone mode (level 1). He wrote several articles and conducted many workshops showing how to integrate this technology into the foreign language classroom. After completing his PhD. at Utah State University in Instructional Technology, he turned his focus to producing interactive videodisc courseware for the Language Learning Center at USAFA.

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PARSERS IN TUTORS: A CRITICAL VIEW

MELISSA HOLLAND

ABSTRACT

There is growing interest in the use of natural language processing (NLP) in language instruction, as evidenced by the fall 1991 edition of the *CALICO Journal*. Excitement about the new technology has encouraged major advances by ICALL developers in error detection mechanisms and in finely tailored feedback for students' free-form language productions; but it has also inhibited critical views of NLP for language learning. This paper will draw from the experience of ARI and other government agencies in developing and assessing ICALL to clarify the nature of parsers in tutors and to outline advantages, limitations, and implications for their role in a program of language instruction. This paper will review systems like ALICE, CALLE, and ARI's BRIDGE tutor. First, arguments will be made that these systems are not intelligent in the sense of traditional intelligent tutoring systems; thus that "ICALL" is a misnomer. Next, advantages will be listed including the enablement of full sentence production and handling of spontaneous errors by students. Two kinds of limitations will be discussed, involving the largely syntactic focus of parsing feedback and the inherent uncertainty of NLP analyses. Finally, the proper role of parsers in tutors, given the current state of the art, will be suggested: ways of palliating parser limitations through manipulations of the tutoring environment, through selection of users, and through assignment of parsers to form-focused aspects of language instruction.

PRESENTER'S BIODATA

Melissa Holland leads the Advanced Language Learning Technology group at the Army Research Institute, which sponsors the development of language tutors using natural language processing technology and intelligent tutoring techniques. Included in this effort is a program of research that makes use of tutoring technology to study cognitive processes in second language acquisition. Dr. Holland came to IARI from the American Institutes for Research, where she investigated the comprehensibility of language and design in public documents for the Document Design Center. As part of this work, she managed a program of research on processes involved in writing and understanding procedural instructions. Her Ph.D. is in experimental psycholinguistics from the Pennsylvania State University.

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"ADVENTURES WITH LANGUAGE"
A MULTIMEDIA APPROACH TO FLES

JEAN JACOBSON

ABSTRACT

The Richmond Unified School District, Richmond, CA, USA, in cooperation with Lucas Arts Entertainment Company and IBM has created a theme-based, cross-curricular, technology-supported curriculum for elementary school foreign language instruction. Materials used in the "Adventures with Languages" classrooms include: "Muzzy", a BBC production distributed by Addison Weslley, "Exploring French and Spanish", a laser disc teacher presentation tool by FLEXIS, Queue Software, and a CD ROM interactive prototype designed especially for this project by LucasArts Learning, a subsidiary of LucasArts Entertainment (Indiana Jones/Starwars).

The classroom is set up in a "stations" format: Multimedia Station, Activities Station, conversational station, computer Station, Listening Station, and Telecommunications Station. The "multi-media" station allows students and teachers to author their own multi-media software, using IBM's "Linkway Live" and "Storyboard Live." Students also use E-Mail to correspond with bilingual students in R.U.S.D. and Spanish speaking students throughout the world.

The presenter will explain how the "stations format" works and will demonstrate some of the products used at the Computer and Multi-media Stations.

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PRESENTER'S BIODATA

Jean E. Jacobson, M.A., Project Director for "Adventures with Languages." M.A. UC Berkeley, University of Arizona. Publications: "Towards a Competency Based Foreign Language Classroom," Forum Summer 1990; East Meets West: the PEFL Link to Communicative Competency" N.E. Foreign Language Conference, March 1983. Author: Multi-media foreign language software.

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WINCALIS: AUTHORING FOR THE IBM

FRED JACOME

ABSTRACT

A full day seminar designed to increase your proficiency and confidence level with CALIS. This seminar will provide you with the hands-on experience you need to master CALIS authoring techniques. Two sessions are planned to suit the diverse levels of experienced Authors:

- Session 1 (morning): This seminar will be geared towards the WinCALIS newcomer. During this session, the participant will be introduced to essential WinCALIS functions, macro commands, and authoring techniques
- Session 2 (afternoon): This session is geared towards the user with some text CALIS experience. Sophisticated WinCALIS techniques and functions will be presented with the aim of enabling the user to integrate advanced functions into their own educational environment.

PRESENTER'S BIODATA

Fred Jacome is a Programming Manager for the Humanities Computing Center at Duke University. His primary responsibilities include the development of CALIS based software for language learning.

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ASSESSING STUDENTS' STRATEGIES IN A COMPUTER-ADMINISTERED GRAMMAR REVIEW COURSE: IMPLICATIONS FOR DESIGN AND IMPLEMENTATION

LATHROP P. JOHNSON

ABSTRACT

The presentation will summarize extensive and detailed data recorded from student homework and testing in an innovative third-year two-semester grammar review course in which students work independently with textbook and computer.

The four principal strategies employed by students will be described and then correlated to such measures as aptitude, GPA, homework-to-tests comparisons, perceived learning, and actual learning as measured by standardized pre- and post-test. Other variables, such as gender, background in the target language, and previous computer coursework, will be discussed briefly.

Finally the analysis will point out features of both the computer programming and the course organization which best foster and most hinder student learning. The results will be applicable to all CALL programming and all use of computers with language classes.

PRESENTER'S BIODATA

Lathrop P. Johnson (Ph.D. The Johns Hopkins University) is Professor of German at Ball State University. For the last ten years he has been producing courseware for administration by the VAX Courseware Authoring System (CAS), using the Digital Authoring Language (DAL). He frequently conducts workshops for faculty, ranging from three-hour quickies up to month-long intensive marathons, on aspects of computer competency, programming, or using authoring systems. Recently he has been using Linkway for multimedia programs and the C+ authoring language on the IBM and Mac platforms.

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MAKING CHINESE EASY TO TYPE IN CALIS FOR WINDOWS 2.0

RICHARD KUNST

ABSTRACT

Duke University's authoring tool CALIS (Computer-Assisted Language Instruction System) for Windows has been redesigned to make it a more effective tool for delivery of CALL in any of the world's languages. The forthcoming version 2.0 of CALIS includes full Chinese-language support for both authors and students. A common limitation of existing authoring environments has been the lack of a good low-frustration system for users to type Chinese text. Even sophisticated Chinese-language materials using Hypercard on the Macintosh have for the most part not expected students to do more than respond to Chinese text on the screen by clicking on option buttons. Chinese CALL for the IBM PC is virtually unknown. But in keeping with CALIS's historical focus on language as words in context and on production skills, CALIS now permits users to type Chinese with a speed and accuracy approaching alphabetic languages like English or Spanish. This presentation demonstrates CALIS's friendly user interface, which enables the user to type Chinese in *pinyin* phonetic transcription, with or without tones, and describes the engine which converts this phonetic input into the correct Chinese Hanzi characters in the desired style with an accuracy greater than 90%--a knowledge based which includes phonetic, syntactic, semantic, and usage information about 25,000 Chinese words and phrases. This knowledge base not only does the work of conversion but will also be open to inquiry by authors and students who need specific language information. It provides a model for similar on-line dictionaries for other languages from Arabic to Yiddish.

PRESENTER'S BIODATA

Richard Kunst, Ph.D., is Research Associate in the Duke University Computer-Assisted Language Learning (DUCALL) Project, where he is developing Chinese and Japanese versions of the authoring system CALIS for Windows, version 2.0. He holds a B.A. in Chinese Studies from Yale University and a M.A. and Ph.D. in Chinese Language and Literature from the University of California at Berkeley. He has taught both Chinese and Japanese languages at Duke, and developed CALL software since 1983. His previous projects include "Chinese Audio Flashcards" and "The Duke Chinese Typist" word-processing program for Chinese and English.

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ECOUTEUR II:
A SECOND-GENERATION AUTOMATIC PRONUNCIATION TUTOR

LIEUTENANT COLONEL STEPHEN LAROCCA

The development of useful computer-based devices for teaching proper pronunciation of foreign languages has been held back for some time by a lack of readily-available hardware. Since the last half of 1992, high-speed, high-resolution sound boards have been available from several manufacturers, priced in the $300 range. This advance in hardware technology has made possible advances in the ECOUTEUR project which I developed as part of my doctoral studies at Georgetown University and demonstrated at the 1991 CALICO Symposium in Atlanta.

The ECOUTEUR project was based on a signal processing technique for direct estimation of the vocal tract shape developed by Hisashi Wakita in the early 1970s (Wakita 1973). By dividing digitized samples of speech into windows one hundred of a second in length and extracting from each of those windows the major resonances, the relative size of the vocal tract could be calculated for its entire length. Superimposing this size data on a cross sectional drawing of the human head resulted in what I called a "pseudo X-ray", or calculated approximation of the speaker's vocal tract during the 1/100th of a second during which that particular window of speech was being produced. To teach pronunciation, ECOUTEUR would present students a target word to say, then analyze student responses, one window (or frame) at a time, and compare the student pseudo X-rays to those of a native speaker pronouncing the same word via computer graphics. This was done repeatedly throughout the length of the utterance, to point out, for example, any unwanted movement (dipthongization) on the part of the student.

The ECOUTEUR project relied on a one-of-a-kind speech board assembled by Dr. Bruce Lund, who in 1990 was one of my fellow students at Georgetown. Though it provided high-resolution values for individual speech wave samples, it was not capable of high-speed sampling, and thus limited ECOUTEUR's ability to provide very accurate calculated images.

What was need was a sound board capable of sampling rates in the 20-24 kHz range, combined with 16-bit resolution. At least three manufacturers make boards like this for ISA bus MS-DOS computers. The one I am using from Media Vision has a low-cost developer's kit that provides essential code for accessing the digitized sound data.

ECOUTEUR II is thus a second version of my original project, built on a more capable and more readily available set of hardware components. It continues to rely heavily on the pioneering efforts of Wakita; in addition to using his vocal tract shape estimation technique, ECOUTEUR II also incorporates Wakita's later work designed to calculate the overall length of the vocal tract at any instant in time (Wakita 1979). This data is used to model the presence or absence of lip rounding, an important aspect of proper pronunciation of vowel sounds for French, German and other languages.

ECOUTEUR II makes more use of linguistics than its predecessor. The earlier version used the result of a single calculation to produce of matrix of eight values from which the vocal tract configuration was derived. In effect, the model was based exclusively on the relative value of the first four formant frequencies. The later version is able to consider more data, and to use this data to check for other acoustic correlates to articulatory features. In effect, Wakita's work, which has a pronounced engineering bent to it, is supplemented with that of a number of acoustic phoneticians, including Delattre, Jakobson, Halle, and Fant. For example nasality, caused by the lowering of the velum to open the nasal portion of the vocal tract, is handled by a separate analysis routine that checks for nasality's acoustic signature as identified by Gunnar Fant (Fant 1970: 148-150). Having augmented Wakita's model with separate calculations for vocal tract length/lip rounding and nasality, the door is open for the expanded use of heuristics such as these to help the calculated image better capture the articulatory actions of the student being tutored.

The use of more mature hardware in ECOUTEUR II facilitates the implementation of new features that were envisioned but never accomplished in the earlier model. ECOUTEUR II plays back what it hears in small increments, comparing the student's own speech to the prerecorded model in the process. This allows students to hear and see at the same time the difference between what they are doing in pronouncing a target utterance, and what a native speaker does.

ECOUTEUR II has great potential for use as originally conceived, as a pronunciation tutor for beginning students of French. Unlike the hoary tape recorder and its computerized counterpart, ECOUTEUR II affords students the opportunity to see what they are doing wrong when they mispronounce certain utterances, and to see precisely how to correct pronunciations. As such, ECOUTEUR II gives students useful feedback before their ears are trained to hear the difference between, for example, the French /y/ and /u/ sounds. The pseudo X-ray proves to students what their teachers can only tell them; that 'tout' and 'tu' are not pronounced the same, and that what the students repeated was oftentimes not exactly the same as what the native speaker modeled for them.

The fact that ECOUTEUR II, like its predecessor, was intended for use by a single student at a time without teacher intervention is another important aspect of its usefulness. Such a device can move the drudgery of elementary pronunciation drills out of the classroom, and allow students to master the basics at their own pace. It also provides a very patient, non-threatening, inanimate tutor to students who are afraid or embarrassed to make foreign language sounds aloud in front of their peers and teachers, as many beginning language students are.

Colleagues have pointed out that ECOUTEUR, with its slow, detailed analysis of tiny bits of student speech, should be used by students to prepare them for more complex computer based language learning activities that use speech recognition. Before we can reasonably expect students to say things like "I want two round trip tickets to Dijon" in intelligible French that a machine can recognize, those same students must have already mastered the basic sound system of French. Other colleagues have suggested that the ECOUTEUR analysis `engine' be implemented as a pull-down help module, to be used by students working on higher level exercises but who occasionally have need for assistance in determining what is wrong with an utterance the machine fails to recognize.

The ECOUTEUR analysis "engine" could be coded to analyze any common digital sound file format, and could thus, in theory, be used to demonstrate the proper positioning of the vocal tract for any recorded utterance. Though such a generalized version of ECOUTEUR is probably feasible and might be very useful as well as quite amusing (*à la* Max Headroom), the intensive computational load on the host computer remains to be considered. The frequency domain analysis of the digitized speech signal on which the ECOUTEUR project is founded requires a prodigious number of floating-point mathematical operations for each centisecond analyzed. A special digital signal coprocessor might be needed to make such a general purpose analysis engine operate fast enough to please the eye. Such devices could indeed be commonplace by the middle of the decade.

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Stephen A. LaRocca, Lieutenant Colonel, U.S. Army, holds a Ph.D. from Georgetown University in computational linguistics. He is the Director of Educational Technology for the Department of Foreign Languages at the U.S. Military Academy, West Point, New York.

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THE DEFENSE LANGUAGE INSTITUTE FOREIGN LANGUAGE CENTER EDUCATIONAL TECHNOLOGY NEEDS ASSESSMENT

JOHN LETT

ABSTRACT

The Defense Language Institute Foreign Language Center (DLIFLC) Educational Technology Needs Assessment (ETNA), was a contractor-assisted research initiative conducted by the DLIFLC. It was designed to obtain, develop, and synthesize information regarding optimal applications of educational technology in foreign language education from both resident and nonresident perspectives, and included evaluations of pilot videoteletraining and computer-assisted study programs. The presenter will provide an overview of the ETNA project and discuss methodological issues and major findings regarding the assessment of technology-related foreign language training.

PRESENTER'S BIODATA

John Lett is Director of Research at the Defense Language Institute Foreign Language Center, where his responsibilities include conducting and coordinating research performed at or for DLIFLC, including cooperative research projects. He holds a Ph.D. in Foreign Language Education from The Ohio State University.

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EFFECTIVE HUMAN-COMPUTER INTERACTION IN IVD/CALL DESIGN AND EVALUATION: HUMAN FACTORS

HSIEN-CHIN LIOU

ABSTRACT

This paper addresses the design and evaluation issues of human-computer interactive systems with emphasis on research and development of interactive videodisc courseware for computer-assisted language learning (CALL/IVD). Though CALL scholars are very enthusiastic about multimedia or hypermedia for learning, in what way these new media formats impact learning, or what characterizes effective multimedia learning is more unknown than controversial at their present development. Theories and practices of language learning, computer-based learning, cognitive psychology, or human factors all can shed light on the issue. This paper, however, investigates the problem from the perspective of human factors. Literature from human factors, or ergonomics booms due to research on various aspects of human-computer interaction. For example, menu selection, commands, graphics, animation, color, direct manipulation, natural language interface, error handling, on-line messages, prevention of errors, screen formatting are the common issues which courseware designers and evaluators are concerned about. In this paper, theories, principles, and guidelines in human factors such as in Shneiderman, 1987 are explained and applied to assessing the effectiveness of CALL/IVD materials. In what way these factors are related to language learning and ultimately contribute to a successful interactive CALL/IVD system are suggested. For example, cognitive psychologists may set up measurable goals in an interactive system such as time to learn, speed of performance, rate of errors, subjective satisfaction, retention over time, but what is crucial to language teachers may vary from contexts. Some of the key points will be illustrated by videotaped segments (in presentation) or examples (in text) from the author's ongoing EFL interactive videodisc project.

INTRODUCTION

Well-designed CALL materials and evaluation of them should be based on important theories in this area and principled guidelines. Theories as well as practices of second/foreign language learning serve the cornerstone, not to exclude areas in CAI, cognitive psychology, and human factors. Principled guidelines may consist of five considerations: context, instructional design, instructional management, human factors, and documentation (Hart, 1986). This paper will concentrate on only human factors with illustration from examples of an IVD/CALL project the author is working on recently.

HUMAN FACTORS IN INTERACTIVE DESIGN

In developing multimedia or hypermedia courseware, we are concerned whether the interface is user-friendly, or whether the user understands how to operate or navigate in the courseware. These are the issues of an area called human factors, or software ergonomics, from which explicit theories, principles, and guidelines are desired and helpful for CALL courseware designers.

Theories

In the context of a text editor, the transition diagrams (Kieras & Polson, 1985) are, though limited, helpful for instructional design because it provides the predictors of learning time, performance time, and errors by use of production rules to describe the conditions and actions. On the other hand, the 4-level approach of Foley and Van Dam (1982), the GOMS (goals, operators, methods, and selection rules), and the keystroke-level model both proposed by Card, Moran, and Newell (1983) concerned less on learning. A more comprehensive and useful theoretical model for CALL, in my opinion, is the syntactic/semantic model (Shneiderman, 1987). Following the dichotomy of syntax/semantics in programming languages, this model distinguishes user knowledge/behavior into two types. The syntactic knowledge is a user's knowledge about device-dependent details (e. g., which key to erase a character). It tends to be arbitrary, ill-structured, system-dependent and cause many other difficulties for users to master. The other type is a user's semantic knowledge about task and computer concepts (as manifestation of objects and actions). A user's semantic knowledge tends to integrate three kinds of knowledge: object, action, and multiple-level of semantic knowledges. It is important that a task object should be made explicit and a user task action should be laid out clearly for users/learners in a system. This model has been used in the contexts of programming, database manipulation, and direct manipulation (the last one to be explained shortly in text).

Principles

One of the primary human factors principles is to recognize the diversity of (A) users, (B) tasks, and (C) interaction styles and optimize the FIT among them. Users can be divided into novices, knowledge intermmittents, and frequent users. Task profiles require a lengthy task analysis. The interaction, or dialogue style in a user interface is the protocol for communication between the user and computer.

While the theories above may look abstract for designers, it does put much emphasis on the USER (or learners in CALL), the foremost and essential factor. Whereas in the area of language learning, many learner variables have been raised as well as investigated, there are differences and similarities between language learning in general, CALL, and human factors, on the other hand. The common core may be some learner cognitive styles measured by well-known psychological scales such as reflectivity/impulsivity; high/low tolerance for ambiguity; field dependence/field independence (FD/FI). While these are overlaps across fields, little research has been conducted in the human factor areas. In an empirical study on the relationship between FD/FI and human-computer interaction, Ambardar (1984) found that field dependent subjects strongly preferred the strictly organized, sequential item number search mode. It was also found in a study (Jamieson and Chapelle, 1987) on observing language learners' working styles on the PLATO lessons that impulsivity and field independence are both independently related to fast response time.

The different research directions in human factors and language learning may partly result from specific concerns of the human factors fields in non-educational contexts where other considerations such as security become of paramount importance. The *Journal of Ergonomics Abstracts* offers classification of human central processes as important research agenda, and a set of factors affecting perceptual motor performance such as arousal and vigilance, fatigue; perceptual (mental) load; boredom; sleep deprivation; drugs and alcohol (cited from Shneiderman, 1987, p. 22).

The second important principle, task analysis can be divided into work in two levels: task level and content level (Jonassen, 1985). Simply put, learning tasks can be either "remember" or "use" learning behaviors (Merrill, 1983). The content level concerns the type of information being processed, which in terms determines the type of knowledge representation for acquisition -- second/foreign language acquisition in the CALL context.

The third principle is selection of interaction styles. Six major types are discussed. First, direct manipulation has become popular because of its visual/graphic orientation, high interactivity, and ease to learn. The design of hypertext or hypermedia requires this style as one of the dominant interaction channels. However, special caution should be taken when applying it in CALL materials. The advantages of What-you-see-is-what-you-get, or WYSIWYG lie at the lost of loss of structure; this results in difficulty in supporting tasks where independent processing of several inputs, or isolation of a subset of variables is required (e. g., Carswell & Wickens, 1987). Secondly, natural language, as the most direct way for language learners to perform communication tasks, requires a huge amount of computer processing cost and complexity, and is regrettably seldom applied in CALL contexts successfully (especially when the domain knowledge is broad).

Third, the command language is seldom used alone in CALL courseware; however, it can be seen as one feature of the Hypercard environment where learners can request a dialogue box to show up for either fast executing commands or issuing an command when the menu bar is not available. The fourth style is a menu selection system. The importance of meaningful organization of menu items was demonstrated in various studies (e. g., McDonald, et al., 1983), where error rates, user think time, and response time were reduced in almost half in a meaningful organized setting as opposed to a random organized one. Frequency of use and grouping by functional similarity are important considerations; thus, the most frequently used items, and the most important items should come first. One of the greatest advantages for menu selection design is minimization of memory load on the user. Fifth, the question and answer dialogue is not widely used recently because it is slow and cumbersome; however, it is very useful as a way for conforming potentially catastrophic actions from users such as deleting a file. The last, form-filling dialogues, a popular method for structured data entry, requires minimal training to master and can easily be integrated with other styles.

In addition to the six main dialogue styles, the windowing system may have become many CALL designers' favorite. Though with many advantages, a caution needs to be raised: time spent in navigating through a window system may become much longer than a non-windowing environment as found in Davies, Bury and Darnell (1985) due to extra time spent in e.g., opening and closing windows, and scrolling data. Thus, if users are experienced and when efficiency becomes important, given a particular limitation of hardware, e.g., small RAM, other environments may be preferred than the windowing interface.

Besides users, tasks, and interaction styles, nine more golden rules of underlying principles are raised for design of interactive systems (Hart, 1986; Shneiderman, 1987):

1. strive for consistency–minimize visual search (verified in the CAI context by Aspillaga, 1991 where information display at a consistent location or relevant to graphical information is found to facilitate learning)
2. enable frequent users to use shortcuts
3. offer informative feedback (e.g., inform consequence of actions oroperations; inform user status)
4. design dialogue to yield closure--"sequences of actions should be organized into groups with a beginning, middle and end [with informative feedback]" (Shneiderman, 1987, p. 61)
5. offer simple error handling
6. permit easy reversal of actions
7. reduce short term memory load
8. share in the initiation of events
9. offer real-time processing for high enough velocity of interaction to maintain user interest.

These guidelines are meant to be interpreted, defined, and extended based on requirements by various contexts.

The EFL IVD project I am working on includes some of the principles above. To strive for consistency, color codes and layouts (to be discussed shortly) have been used to signal different lesson and functional levels in order to orient learners throughout the courseware. To share the initiatives of instructional events, we have designed a tutorial where direct instruction is provided and self-paced hypertext and index modules where learners read or view through the materials and stop to request various helps as perceived needs arise.

Guidelines

Since many detailed guidelines accord with the above principles, only important ones are discussed for CALL developers' reference. Five types of guidelines are raised here. First, the following are what designers should watch for about data display regarding data organization and attention getting.

1. consistency of data display (e. g., be consistent in labeling and graphic convention; standardize abbreviation; use consistent format in all displays--headers, footers, paging, menus)

2. efficient information assimilation by the user

3. minimal memory load on user (e, g., present a page number on each display page and allow operators to call a page by entering its page number)

4. compatibility of data display with data entry (Shneiderman, 1987, pp. 69-70)

Occasionally, designers need to highlight information for learners. The following features in data display can be used for attention getting.

1. intensity: two levels only

2. marking: underline, enclose in a box, etc.

3. size (up to 4)

4. choice of fonts (up to 3)

5. inverse or normal video

6. blinking (2-4 hertz)

7. color (up to 4):

8. audio: soft tones (ibid., p. 71)

Second, the purposes of using color in presentation of courseware are to facilitate subtle discrimination in complex displays, emphasize the logical organization of information, or draw attention to warnings (ibid., p. 337). Designers may use color change to signal status change as we have designed in our IVD project. As for color of text, it was found in a study (Ohlsson, Nilsson, & Ronnberg, 1981) that both speed and accuracy of reading increased as wavelength, or contrast difference between foreground and background colors increased such as blue or green on white.

The third set of guidelines are about data entry. Special attention is called for consistency of data entry transactions, besides repeated guidelines as for data display. Fourth, guidelines about screen design concern arrangement of objects on screen. In a NASA study (Dodson & Shields, 1978), more dense screens required longer search time than sparse screens; however, functionally grouped displays yielded shorter search time. As for screen size varied by 9, 18, or 34 lines of texts (68 characters per line), no difference between the size and user performance was found in a study (Reisel & Shneiderman, 1986) but the possibility that more experienced users may lose anxiety and become comfortable with the higher density is suggested.

Last, animation, as a popular feature, is good at communicating ideas involving changes over time. Its wide application can be based on the dual-coding theory (Paivio, 1986) where pictures and words are claimed to activate independent visual and verbal coding mechanisms. Since pictures are more likely to be coded verbally and visually, they can be remembered better. Animation, as one type of picture--plus motion, can be remembered even better compared with static pictures, because it can represent motion and thus reduce the level of abstraction of temporal ideas. CALL designers, if willing to try out animation, should consider how this contributes to language learning. A very good example which has been implemented is introduction of English prepositions in relation to positions of nouns.

EVALUATION OF INTERACTIVE CALL SYSTEMS

In evaluating interactive CALL systems, hard vs. soft methods become the first consideration. A hard method, such as experimental designs, is used to ask how good a system is; this kind of method is commonly used after a series of formative evaluation has been done to know well enough about aspects of the courseware. Then a vigorous design is used to compare the courseware with others. On the other hand, soft methods such as interview, observation should come during the design-refinement cycle to ask what is bad. In the area of human factors, researchers try to replace the vague notion of "user friendliness" with five measurable quality criteria: time to learn, speed of performance, rate of errors, subjective satisfaction, and retention over time (Shneiderman, 1987). In CALL context, time to learn and speed of performance may not be as importance as in business and industry fields. Speed can be important if learning gain is considered at the same time. Rate of errors when occurring in operation may cause confusion and disorientation, which leads to unsatisfactory subjective responses from learners; however, rate of errors itself as types of learner target language input to the system can become CALL scholars' research agenda because they are indicators of interlanguage development. Other measures are as important for most CALL contexts.

As for scope of evaluation, human factors researchers such as Malone, Kirkpatrick and Heasly (1984) suggested some of useful test measures which may be applied to evaluate CALL materials.

a. user-friendliness (extent to which it directs the user on what to do next: keeps him informed as to where he is in the process, and what the computer is doing, is responsive to his needs, and provides procedures which are logical and efficient).

b. information quality (availability, accuracy).

c. display quality

d. data organization: meaningfulness of architecture

e. dialogue: system response time

f. procedures: accuracy, internal consistency, and sequencing

g. documentation (pp. 118-119)

CONCLUSION

Design and evaluation of CALL interactive courseware require serious considerations in various aspects and ingenuity. Human factors is the area which aims to optimize the fit between users and the systems. Ignorance of it can result in unpleasant communication which leads to loss of learning effects. However, there is still a long way for CALL courseware developers to work out the most useful and related guidelines, principles and even theories about human factors so that our courseware becomes easy and comfortable to use and effective to learning as well. The paper is an initial step toward this direction.

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A SECOND LANGUAGE ACQUISITION (SLA) FRAMEWORK FOR EVALUATING THE EFFECTIVENESS OF COMPUTER-ASSISTED LANGUAGE INSTRUCTION (CALI)

JENNIFER LIU AND JAMES CHUNG CHAN

ABSTRACT

The 45 minute presentation will be divided into four parts. It will begin with an introduction of the current practices and studies about assessing CALI courseware. Following that is a concise summary of major theories in second language acquisition and their implications for evaluating the effectiveness of CALI, which results in a theory-informed framework for assessment. The third part of the presentation will apply the framework to evaluate the effectiveness of representative Chinese courseware. The last part will be a discussion of the validity of the framework and its potential use. Each part will last about ten minutes and the last five minutes will be open to questions.

How second or foreign language courseware ought to be developed? What makes a courseware effective? The authors believe that what really determines the effectiveness of CALI is our understanding of language and learning that underlies the courseware design rather than the computer technology. The applications of computers in language instruction should be based on SLA theories that ultimately account for the learning variance. This paper presents a framework, derived from the major SLA theories, to overcome the limitations of comparison approach in assessing the effectiveness of CALL. Instead of comparing CALI with traditional classroom teaching or other instructional media, the evaluation is based on the theoretical factors that truly underscore the success of CALI design and development.

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Jennifer Liu is an assistant professor of East Asian Languages and Cultures Department at Indiana University, Bloomington. She coordinates the Chinese language program and is involved in research related to second language acquisition, Chinese language pedagogy, and computer-assisted language instruction. She have developed Hypercard-based courseware to teach Chinese writing and reading.

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Developing a Computer-Adaptive Reading Proficiency Test: The Russian Experience

Pardee Lowe, Jr., Danielle Janczewski, Jerry W. Larson, and Kim L. Smith

ABSTRACT

This paper will discuss the design, field-testing and validation of a computer-adaptive (CAT) Russian reading proficiency test administered by an IBM-compatible computer for Government adult language users whose performances must be rated on the ACTFL/ETS/ILR reading proficiency scale. Crucial to the design was cooperative work between the developers of the software shell, The Humanities Research Center at Brigham Young University, and the users of the testing program, the Language Training Division of the Central Intelligence Agency in Washington, D.C., and the developers of BIGSCALE (a program for analyzing items statistically according to a Rasch model) at the University of Chicago. Test takers are assessed on their ability to read current Russian on a number of topics in a variety of styles. Testing requires ascertaining consistent and sustained performance on multiple passages up to and through the ILR level assigned. Simultaneously the program also determines a ceiling in the examinee's performance. The overall design of the test, the algorithms used ('the two presentation algorithms,' 'content limiting,' 'content distributing,' and 'culture') in the software shell, the types of items used, and the variety of topics represented in the reading selections will be treated. Some attention will be given to the relation of preliminary grading of items on the ILR scale to the levels which the field-test statistics suggest. The test will be demonstrated.

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UNE VIE DE BOY: INTERACTIVE READING IN FRENCH

MARY ANN LYMAN-HAGER, JAMES N. DAVIS, JOANNE BURNETT, AND RONALD CHENNAULT

ABSTRACT

Reading comprehension is an oft-neglected area of research in technology-enhanced instruction. The computer offers an ideal means of investigating the reader's need for aids to comprehension while reading text on-line; nonetheless, the computer's ability to track student requests and selections from the keyboard (or mouse) is a feature that has not been included in many software programs on the market. At Penn State, we received a grant to develop an interactive reading program in French using the first 1600 words of the 1956 Francophone African text *Une Vie de Boy* by Ferdinand Oyono. Insofar as the context of the African text was unfamiliar to most third semester students, it presented a particular challenge to the learners. The interactive reading program, in addition to offering on-line comprehension aids (French and English word definitions, cultural background information, clues as to the antecedent of personal pronouns, relations among characters, etc.) also contains a tracker for recording the types of information students request when using the software.

This program, if found to be an effective aid to reading comprehension, could serve as a template which could then be used to create interactive reading computer programs for other languages and other texts. It is currently written with ToolBook (Asymetrix, 1991) on the IBM, but it could also be adapted for the Macintosh platform. Because treating each new text in such a comprehensive manner is such a labor-intensive endeavor, even using a template, we naturally questioned whether or not the media's particular coding capabilities would affect readers' comprehension in a positive or a negative manner. Vocabulary acquisition, as measured by students' scores on a vocabulary quiz taken several days after the treatment, was the particular aspect of textual comprehension that we tested first. We found the group who used the computer program to read the passage performed significantly better than those who used the glossed reading in print form. The computer and non-computer groups did not differ significantly, however, on measures of motivation, prior experience in the language, or number of other languages spoken or studied. Second, we noted data taken from the tracker which would indicate students' actual use of the information tools available to readers instantaneously on-line. We found that, as would be expected at this level of linguistic competence, most students relied primarily on the English definitions of vocabulary words but used other tools as well. These two assessment measures (vocabulary retention and learners' preferences for information) are critical to our ongoing development and refinement of the software product. Further, we think that they will aid other software developers in designing pedagogically sound reading comprehension tools.

Reading has been called "the most autonomous and individualisible ability in language work...." (Brumfit, p. 244). A so-called "receptive" skill, it is much touted (along with listening) by second language acquisition theorists, as an ideal source of comprehensible input (Krashen; Winitz, Terrill, Asher). Observations of readers' overt behaviors, either recorded on videotape or noted by researchers, give clues as to what physiological phenomena may be occurring. Yet few instruments exist to measure what readers actually do and think while reading texts in a second language.

Many of our notions of psycholinguistic processing while reading come from native language reading research (Zvetina). One of the more oft-cited advantages of new software for the humanities, and for second language acquisition research in particular (Garrett, Noblitt and Bland), is the ability to track learners' choices as they are engaged in reading for meaning. Garrett, in particular, has often referred to this particular quality as the "sine qua non" of research-oriented didactic software, so much so that it has been referred to as the "Garrett Imperative." The computer offers a surreptitious, unobtrusive means of gathering data about student choices, such as students' request of the program for the information mentioned above. This data will, in turn, help computer program developers make informed choices about the types of information which will best help students glean meaning from authentic texts.

Background information has been shown to be critical to forming a correct schema of a text (Bernhardt). Further, reading material which is culturally weighted is more difficult than reading material which is unweighted (Hewitt; Feldman). Some relatively new programs on the market, the *Transparent Language* and *Recuerdos de Madrid*, attempt to offer teacher-made background information in a hypercard-like format for reading authentic L2 texts on the computer. Robert Blake's interactive reading program and its tracker have attempted to answer two important research questions: 1) how students of a second language use the dictionary while reading, and 2) how these students use a review mode (not in the format of a discrete test). Blake found, somewhat surprisingly, that students made little use of cognates in their native language and Spanish, and he also noticed qualitative differences in the types of lexical searches conducted on-line by beginning and slightly more advanced students, i.e., advanced students would, for example, enter the infinitive verb form to be searched rather than the entire conjugated form found in the text. Blake lists many questions left unanswered in his study, namely: "Can teachers or a computer program alter a poor reader's behavior by encouraging prudent word searches over compulsive word look-ups? Will that improve reading strategies? Does feedback or error correction affect the learner's conduct? (p. 22)"

A major area for investigation of second language acquisition processes, according to Blake, is vocabulary acquisition. Studies by Miller and Gildea (cited in Blake) have shown that having "instaneous access to lexical information, as one does through an interactive computer system, aids vocabulary development immensely. (p. 19)" Accordingly, our pilot study, conducted in the Fall of 1992 with 262 third semester French students at the Pennsylvania State University, attempts to determine whether or not students using the computerized version of *Une Vie de Boy*'s first 1600 words would acquire vocabulary critical to textual understanding more effectively than students using the print text, accompanying glosses, and audiotape. Further, the differential preferences of students for one type of gloss or another was assessed via a standard questionnaire administered to both treatment groups. The analysis of the first question was completed, and summary data for the second, concerning glosses and other attributes of the reading assignment, is underway.

THE FIRST PILOT STUDY: DETERMINING PROGRAM CONTENT

This report is actually a continuation of an earlier pilot study conducted at the Pennsylvania State University. The first part of the research had us simply testing the unknown vocabulary and the general comprehension of the text via exposure to the printed text in nineteen sections of third semester French language classes in the Spring of 1992. Sections were assigned to one of three treatments: 1) Reading through the text quickly and circling unknown words ; 2) Reading the text and then writing recall protocols in English; and 3) Writing definitions in English for pre-selected, underlined words. We then analyzed students' responses to the text and selected problematic words that were identified by all three means of assessment for inclusion into the computer program (Davis, Lyman-Hager, and Hayden, reported in the *CALICO Journal*, Spring 1992).

THE SECOND PILOT STUDY: AN INITIAL ASSESSMENT OF VOCABULARY ACQUISITION AND STUDENTS' REQUESTS FOR INFORMATION

Software authors James N. Davis, Mary Ann Lyman-Hager, Lorinda Brader, and Morris Weinstock developed the computer program which offers annotative helps for the first 1600 words of the African text *Une Vie de Boy* (Ferninand Oyono, 1956). This particular text is the first to be treated with the template program *ClearText* described in the Summer 1992 *CALICO Journal*, so the authors felt that it was critical to determine which types of glosses readers seemed to prefer and whether or not the computer treatment (in particular, the coding capabilities of the computer which allow instantaneous look-ups) offered significant long-term benefits (in this case, greater mastery of vocabulary words) to intermediate-level readers in French. The preliminary research conducted in the Spring of 1992 determined which words were the most unfamiliar to students, and they were included in the program's on-line glossary.

In summary, the second part of the interactive reading research project, reported in this paper, has us testing the completed software and the glossed reading in print in a language laboratory setting to determine which elements or coding capabilities of the computer program are the most helpful to students' mastery of vocabulary words deemed critical to understanding the story. Instruments of evaluation include the vocabulary quiz, rudimentary elements of the tracker, and questionnaire data obtained at the beginning of the semester. Results of this second assessment will be reported, as well as parts of the actual computer program . Software and reading evaluations using a Likert scale and recall protocals were also administered to students, and this data will be examined at the time of the Spring 1993 replication of the study, which will have researchers examining recall protocols in detail to determine student retention of the story following computer and non-computer treatments. Results of the users' questionnaires will also be analyzed.

THE STUDY

Fifteen sections of French 3 at the Pennsylvania State University in the Fall of 1992 (N=262) were incorporated in the study, although most (but not all)individuals in all of the sections agreed to have their data included for the final analysis on the Informed Consent Form distributed during the first week of class, along with a questionnaire. The purpose of the questionnaire was to determine incoming students' motivation for studying French, their prior instruction in the language and in other languages, and their knowledge of other languages. These values were coded as ordinal data.

As a part of the regular coursework in the language laboratory, students by section were randomly assigned to computer or non-computer reading groups. The passages were made available in the language laboratory for a three day period.. All students read the passage right there in the laboratory: those students using the computer program received their helps "on-line," while students in the non-computer treatment group had access to pages of glosses drawn directly from the computer program. Both treatments could opt to have the story "read" by authentic speakers of French from Francophone Africa, either on audio tape, or, in the case of the computer group, in digitized audio format. Both had pictures for difficult-to-define concepts. There were no time limits set for either treatment: all students were given instruction sheets and were monitored very little by student lab attendants, who signed the students' questionnaires to indicate that standardized procedures had been followed. Time spent on the computer program was recorded by the tracker under the students' ID numbers, as were the number of keystrokes, requests for word definitions in English and in French, cultural information, relations among characters, and requests to hear audio recordings of the entire text, the individual page, or individual words. The latter feature was not practically possible for the non-computer group.

When the students had completed the reading, they were immediately given survey questionnaires and a recall protocol sheet where they were asked to write, in English, their recollection of significant events in the story. At the beginning of the following week, students discussed the story in class following a uniform question and answer sheet, then immediately took an in-class vocabulary quiz composed of words that the teaching assistants had agreed were the most critical to the story. Consensus on the twenty "critical" words included on the vocabulary quiz had been obtained earlier by having each of the eight teaching assistants independently read the passage and circle words they felt that students would absolutely need to understand to be able to make sense of the text. The words were presented in the of the original text on one page, with a matching column format on the second page.

THE DATA

For the purposes of this pilot study, an equal number of sections was chosen from which subjects were randomly selected. After that, 35 students were selected from the non-computer treatment group and 37 from the computer treatment group. T-tests for independent samples were carried out for the dependent variable, the vocabulary quiz scores, of the two treatment groups. Mann-Whitney U tests were performed on the two treatment groups for measures (ordinal data) obtained from the questionnaire filled out by all students during the first week of the semester (motivation, experience, sex, and other languages studied). Results of these separate tests are listed in Tables 1 and 2.

TABLE 1: T-Tests for Independent Samples of Treatments: Vocabulary Quiz Scores (20 items)

	N	Mean	Standard Deviation	Standard Error	Separate T Value	Variance 2-Tailed Prob.
Non-Comp	35	11.6857	4.575	.773		
Computer	37	14.1351	3.457	.568		
					-2.55	.013*

*Significant at the .05 level

TABLE 2: Mann-Whitney U - Wilcoxon Rank Sum W Test for Independent Samples of Treatments

Prior Experience or Instruction in the French Language by Treatment (Non-computer / Computer)

Cases	U	W	Z	2-TailedP
35 (Non-Computer Group)				
37 (Computer Group)				
---------	605.5	1235.5	-4851	.6276
72 total				

Motivation to Learn or Perfect the French Language by Treatment (Non-computer / Computer)

Cases	U	W	Z	2-Tailed P
35 (Non-Computer Group)				
37 (Computer Group)				
---------	___591.0	1221.0	-.6661	.5054
72 total				

Other Languages Studied or Spoken by Treatment (Non-computer / Computer)

Cases	U	W	Z	2-TailedP
35 (Non-Computer Group)				
37 (Computer Group)				
---------	625.5	1255.5	-.2935	.7691
72 total				

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDY

Great lengths were taken to assure that the conditions of reading for both groups were as equivalent as possible. The place, times, availability of materials, and the materials themselves were as similar for both groups as could be. The sections of French 3 were randomly assigned to the treatments. Both groups worked on the program, then filled our questionnaires and wrote recall protocols without the benefit of looking at the text. The materials were handed to lab assistants, who filed them by section for the researchers.

When both parametric and non-parametric statistics were performed on the data, our hypothesis of no significant differences in means between the computer and non-computer groups was rejected at the .05 level of significance. We also tested for possible contributions of prior experience in instruction and other languages, as well as motivation to study French but found no significant difference in mean scores for these measures between groups. Our conclusion is that students who worked with the computer program were better able to retain the vocabulary. A task for further research will be to determine if this result is replicable and then, if so, why the computer group retains vocabulary better than the non-computer group.

It was apparent from the low number of scores (22 out of 37 in our sample) available from the computer group's tracker, that not every student worked independently with the computer, nor were they specifically instructed to do so. This was confirmed by student lab attendants and by one researcher, who observed a group of three working together on the program. Despite Brumfit's assertion that reading is an "autonomous and individualisible" task, apparently students who work on the computer choose to work, under certain conditions, in a collaborative mode. Could this mode have caused readers to reprocess and retain individual words differently than those who worked alone? Do students working on the computer spend a longer time on task? Is the task of looking up a word in a dictionary different on-line than in a dictionary? Does the instantaneous nature of the act of looking up words on a computer cause one to use this feature more or less than when reading a text in print? Does the task constitute a sort of confirmation of suspicions about word meaning and, then, function as a form of feedback?

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James Davis does research in the area of foreign language reading. He has published articles on the reading process and on the teaching of literature in a foreign language in such journals as *French Review, Modern Language Journal, Journal of Reading Behavior,* and *Reading Psychology*. Davis is a review editor for *Language Learning* and is currently developing a French reader for Heinle and Heinle Publishers.

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Ronald Chennault is an M.A./Ph.D. student in the French Department at Penn State, with a concentration in foreign language acquisition and pedagogy. He is the recipient of the University Academic Computing Fellowship, which allows him to research ways to integrate computers and other technologies into foreign language instruction. He is a consultant to the IBM Language 3 Initiative Project at Penn State.

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NEWSPEAK
Distance Learning System

Peter F. Mason

ABSTRACT

Newspeak aims to put the power of computer conferencing to the service of language learners particularly those learners who are isolated or who find it difficult to attend conventional group lessons. The big advantage Newspeak represents over previous conferencing systems is that the power of the ISDN networks – which now covers the whole of France – allows students to download large files such as dialogue files with questions and model answers or voicemail files with messages from a teacher and other students. Newspeak aims to combine the best CALL materials presently available with a sophisticated user-driven learning network; using technology for communication.

Interactive Video in the classroom using videocassettes. Using a simple template module developed by Peter Mason, teachers can quickly prepare interactive video modules around news programs recorded the night before or adapt video favorites for self study courses and open learning centers.

PRESENTER'S BIODATA

Peter Mason worked for the British Council for several years following his teacher training before moving to SELTEC (London) to work in the Computer Assisted Learning field. He is now Project Director at ASCOLA, Bordeaux, responsible for several language projects on a local and national level.

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THE DESIGN AND BIRTH OF A LASERDISC FOR ITALIAN LANGUAGE ACQUISITION*

ELIZABETH H.D. MAZZOCCO

Several years ago I had the opportunity to attend a summer seminar on video/interactive video at which Jim Noblett was one of the keynote speakers. Fascinated by the seemingly intricate complexities of his *système D* and his demonstration of French video via Windows, I nodded in silent assent as he advocated the professor's making use of existing video material thereby circumventing the agony of production, and basking, instead, in the joy of creativity and manipulation of existing video image. I remember jealously assessing the quality of the video he had at his disposal and thinking that we Italianists had a long way to go to catch up to our French counterparts in the area of interactive material. At some point during those summer presentations, I determined that it was time to produce some quality Italian material, and that I was willing to be the guinea pig producer. Born last summer after a two year gestation period, the result of my production efforts, which I christened "Parliamoci a quattr'occhi", is a laserdisc accompanied by a Hypercard program designed to aid elementary or intermediate Italian language acquisition. But before I describe the finished product, let me delineate the various stages that the production took, since the project's goal was truly twofold: first, of course, I wanted to produce a workable laserdisc program, but secondly, and maybe more importantly, I wanted to follow the most inexpensive approach possible and to be completely involved not only in the design but also in the production of the laserdisc.

I began having determined only that I wanted to press my own laserdisc. It had become apparent to me as I taught Italian language courses that my students, no matter how diligently they studied, encountered difficulties when faced with an Italian speaker other than me or my teaching assistants. When I walked into the classroom and said "Buon giorno!", a resounding "Buon giorno" was returned to me by smiling, confident students. But let another Italian speaker walk in and utter "Buon giorno" and the students froze. This is, in fact, in keeping with the most common complaint of students when they first go abroad, which is that the people "speak too fast" or "have a funny accent." This is in spite of the fact that my students are innundated with video featuring native speakers using natural, colloquial language. However, while a bright student can watch a video assignment -- for example, a SCOLA news clip about an earthquake in the Appenines -- and understand it well enough to summarize it or answer particular questions, the fact remains that if the same student goes into a cheese store to buy a piece of cheese and cannot understand the counter-clerk's question, "How much cheese do you want?", the student will leave the store with an entire wheel of cheese. This is the problem I wanted to address: I wanted my students to be able to communicate not only with a cheese clerk who studied in broadcasting school to perfect his/her enunciation but with cheese clerks throughout Italy from Milan to Rome to Pescara. I thus decided to press a laserdisc which could be manipulated via Hypercard to help the students' oral comprehension.

Now, where to find the video? At first, mindful of possible copyright restrictions, I plunged into existing Italian video, looking at everything from film clips to SCOLA excerpts to videos made here in the US to accompany particular textbooks. I found miles of video about World War II, opera, fashion, and strikes and nothing about cheese or families or school. My final determination was that if this laserdisc were to be useful to my students I would have to shoot my own video -- a rather unsettling thought to someone who has trouble focusing a camera. Fortunately one of my consultants was a videographer as is the director of the university's student language resource center, and after a few hours of instruction and some common-sense tips about lights and microphones, I was ready to shoot some practice interviews around the university; I already knew that the video that I would eventually shoot and edit for the laserdisc would have to be garnered in Italy.

Because I had already decided that my finished product would reflect Italians from varying regions speaking authentic language, I knew that part of my summer in Italy would consist of interviewing subjects from North to South. Fortunately, my own years of research in Italy have yielded many friends and acquaintances upon whom I felt free to call for assistance. After I decided that I would interview students from various universities (having pondered the "cute" potential of children as well), it was a fairly simple matter to contact my colleagues and have them arrange for me to have a room/studio in which to conduct my interviews. As for finding the coveted students to interview, we stood in the hall and asked them to participate! (prudently requesting their signature allowing us to use their interview for educational purposes).

As far as equipment was concerned, I should note that I had an 8 mm camcorder with me, an external microphone (whose connection went out somewhere between Siena and Rome!), a mini-tripod, two rechargeable batteries, and an electric current converter. I immediately discovered that using electric current created an audible buzz picked up by both the camcorder microphone and the external one, so the batterypacks became the norm, meaning that I was limited to about two hours of interviewing between charging sessions. I prepared the interview material carefully in the States before departure. Each person was asked the same questions, some quite specific like "How old are you?" and some more general like "Describe your family." Fortunately my husband is both an Italian professor and a native Italian speaker; he actually conducted the interviews, thus leaving me free to concern myself with the videotaping. I returned to the States with about 20 hours of videotape.

The first step was to convert the 8mm to VHS since I had a VHS/Super VHS editor to use. This loss of a generation even before editing had been of concern since the beginning of the project (although fortunately, it didn't noticeably affect the finished product); in the end, I chose to take the 8mm camcorder with me simply because that was what was available. As I noted earlier, I was determined to use equipment that had already been purchased. So I made my VHS versions of the video and began editing them. I needed a finished product of exactly 30 minutes including titles and blank space; editing the tape was the most difficult part of the project because I had to choose only 28 minutes from that 20 hours of raw footage! I stuck to my original script, trying to choose responses which reflected regional variation as well as variation in grammatical structure and vocabulary. A special effects board and character generator helped me put on the finishing touches, and I sent the edited video to New York for the actual pressing. I had a single copy pressed for under $350 in less than two weeks. Once the completed laserdisc was returned, it was time to create the Hypercard program which would run it.

I had already done quite bit of the creative work involved when I was editing the video. Setting up the Hypercard program involved selecting the video segments, asking the question, programming in the desired response as well as taking into consideration probable erroneous responses with directive prompts designed to help the student eliminate his/her error. Basically, the program is designed so that the student sees the video segment, reads/listens to a question about the segment, responds to the question, and then, depending on the answer, either continues to the next segment or automatically returns to the same segment if the answer isn't correct. The interviews can be manipulated for use with either elementary or intermediate students. The scripting is not complex as illustrated by the sample script below:

The question is "Come si chiama questa ragazza?" (What's this woman's name?)

The following is the Hypercard script:

```
On process txt
  if (txt contains "Si chiama Maria Francesca Traldi.") or -
  ("La ragazza si chiama Maria Francesca Traldi." is in txt)
or -
  ("Lei si chiama Maria Francesca Traldi." is in txt) or -
  ("Questa ragazza si chiama Maria Francesca Traldi." is
in txt) then
    answer "Ben fatto, continuare" with "Va bene"
    put empty into cd field "answer"
    go next
  else
   if "Si chiama Maria Francesca." is in txt or -
   "La ragazza si chiama Maria Francesca." is in txt or -
   "Lei chiama Maria Francesca ." is in txt or -
   "Questa ragazza si chiama Maria Francesca." is in txt
then
     video play,560,670
     ask "e il cognome?"
     if it is "Traldi" then
      answer "Ben fatto, continuare" with ""
      put empty into cd field "answer"
      go next
      exit process
     else
      video play,560,670
      put empty into cd field "answer"
      exit process
     end if
   end if
   if "Chiama Maria Francesca Traldi." is in txt or -
   "La ragazza chiama Maria Francesca Traldi." is in txt or
-
   "Lei chiama Maria Francesca Traldi." is in txt or -
   "Questa ragazza chiama Maria Francesca Traldi." is in
txt then
     ask "Did you remember to use a reflexive verb?  Try
again."
     put empty into cd field "answer"
     exit process
   else
     answer "Questa ragazza si chiama Maria Francesca
Traldi." with -
     "continuare"
     put empty into cd field "answer"
     go next
     exit process
 end if
 end if
End process
```

The student may use a variety of correct answers in order to proceed, but any correct answer demonstrates that the student has understood the oral communication of the speaker. The speaker whose card is printed above has a Genoese accent; she is followed by a woman from Venice, then a man from Rome, a woman from Pescara and one from Calabria. The student successfully completing this section can understand basic introductions in a variety of regional accents, from both males and females. The laserdisc includes topics about age, family, university, vacation, childhood, houses/apartments, military service, weekend fun, etc. We are currently adding a facet to the program which will allow us to trace the student's answer patterns, a process, which, when completed, will hopefully allow us to better evaluate what the student isn't understanding and the reasons for that non-comprehension.

This project took about 2 years from inception to birth. It was always one of many projects on which I was working; if I had been able to work at it for a few solid weeks, the whole process would have gone much faster, especially in the editing stage. But all in all, I believe that I've achieved my goals: I did everything myself with some helpful prompting along the way, I did not spend a lot of money for the production and used already purchased equipment; my finished product does reflect authentic language and the variety of speakers that I believe to be necessary. My final test will be when I take my next group of students to Italy. Will they emerge from the cheese store with a slice or the wheel?

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AN IAV MODEL FOR LISTENING COMPREHENSION PROFICIENCY IN BEGINNING GERMAN: *DIE DAME AUS AMSTERDAM*

INGEBORG H. MCCOY

ABSTRACT

This presentation features the results of an assessment study using IAV-based lessons created with the special authoring system LIBRA for an experimental group of students of Beginning German. The IAV Authoring System LIBRA (developed with the support of a FIPSE grant) was used to design 6 listening comprehension lessons (for Beginning students of German) for the program *Die Dame aus Amsterdam* (56 minutes) from the German TV series Derrick. The special design features of LIBRA provide student tasks built on didactic principles of the most current listening comprehension model: students understand non-linguistic information at the macro level before addressing linguistic informations at the micro level of the video text. Students look for observably verifiable cues in 2 stages: (1) visual and paralinguistic cues as well as global information (semantic), and (2) morphosyntactic, phonological and orthographic discrimination. To support such text processing the novel IAV task designs include binary checklists, icon (movable) sorting, checklists. The advances in listening comprehension of the experimental group were compared to the control group which used IAV lessons featuring a traditional treatment of the lessons at the micro level. Special LIBRA design features will be demonstrated.

PRESENTER'S BIODATA

Ingeborg H. McCoy, Ph.D. (UT Austin), Professor of German and Applied Linguistics, SW Texas State University, San Marcos, TX. Teaching and publications in second language pedagogy, oral proficiency, use of video and interactive video. Numerous grants supporting work with reading and listening comprehension proficiency as well as intensive language summer institutes. Currently co-investigator of FIPSE grant for developing LIBRA IAV template.

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A WINDOWS AUTHORING ENVIRONMENT FOR NON-WINDOWS USERS

RAVIRAM MEDAPATI

ABSTRACT

The paper deals about delivering a popular authoring environment like WinCALIS on machines which can not run Microsoft Windows. It will demonstrate how scripts that can be run in WinCALIS can be used equally well in a non windows environment. All advanced features like bitmap images, multiple language fonts of various sizes etc. can be used.

As authoring systems for language learning advance more and more new features are added people are exited. Often the excitement lasts only while they see the demonstrations, since as features advance so does hardware required and cost. Users especially language labs where the proposed adhering systems are aimed at lack these facilities. The proposed adhering system aims to fill this gap. It deals with delivering the MS Windows based adhering system on less powerful machines like the PC Xts etc.

PRESENTER'S BIODATA

Raviram Medapati is an Associate in Research with the Humanities Computing Facility at Duke University in Durham, NC. His interest is with authoring programs on less powerful machines.

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ASSESSING CALL SOFTWARE: A COMPUTERIZED DATABASE APPROACH

CARLA MESKILL AND KAREN SWAN

A recent *MacWorld* special issue decries inequities of computer usage for language minority students in U.S. public schools. Key to this perceived failure is lack of teacher training in pedagogically effective utilization (*MacWorld*, September 1992). The schools, like universities, colleges and adult learning programs, however, continue to invest in hardware and Computer Assisted Language Learning (CALL) software. Development and distribution of CALL software is consequently on the rise. The number of packages available to educators has doubled in the past two years alone. However, while software products currently abound, there persists a dearth of empirical data to support the effectiveness of CALL as a tool for teaching and learning foreign and second languages. Moreover, the bulk of studies undertaken to date report mixed results regarding pedagogical effectiveness. A common conclusion is that effectiveness ultimately depends on carefully calculated and implemented teacher strategies; strategies that are in sync with the needs and ethos of a given classroom (Robinson et al, 1985; Johnson, 1991; Perez, 1984). Where does this leave the language instructor who needs to assess the potential match between software products and a specific teaching and learning situation?

Language professionals are frequently called upon not only to judge the potential viability of CALL for their institutions, but to also ask themselves what CALL has to offer them in terms of their own classrooms and teaching. Relevant information has historically come from two sources. The individual can turn to CALL software reviews in professional publications and to colleagues for anecdotal recommendations. Accessing and sorting through these sources is by no means a straightforward task. First, access to relevant publications and the time to read and catalog reviews can be problematic. Second, perspectives from which this kind of information is presented, both in published and anecdotal forms, shape critiques and recommendations. As such, they clearly affect a particular slant on software products, a slant that the teacher in need of information germane to her own needs and experiences and the needs of her students and institution may not share nor find sufficiently helpful. Another form of guidance in this assessment process, software evaluation review sheets, also saw a period of popularity in the early 1980's (Strei, 1983). Such review guides were an attempt to prompt the novice CALL user to look at a standard list of surface features. Typical software review sheets continue to be limited to formats such as checklists concerned with general categories of software characteristics.

The language teacher's task, though clearly aided by these forms of guidance, might be facilitated via a more directed method of inquiry that offers multiple perspectives on software viability.

This presentation outlines procedures employed in a CALL software assessment project that undertook to establish critical review criteria and methods of accessing applications evaluations once they were completed. Software packages, designed for both native speakers and non-native speakers of English, were analyzed for their potential effectiveness along a range of dimensions established within the framework of communicative language teaching. These reviews were entered into a computer database containing a number of attribute fields that graphically represent the degree to which each software package satisfies the CALL design criteria. In database form, attributes of the applications reviewed can be manipulated for comparison, and generalized conclusions regarding the match of design and perceived effectiveness readily reached.

THE PROJECT

Fifteen teachers of English as a second language participated as software reviewers in piloting the database project. Although at the time none of the teacher/reviewers was a CALL user, each had read extensively the available literature concerning actual and potential uses of CALL and had discussed at length design effectiveness and ineffectiveness as related to theory and methods of language learning. The fact that reviewers were not experienced CALL users may be perceived on the one hand as limiting the breadth and credibility of their findings. On the other hand, however, the fact that these reviewers were uninitiates in terms of actual practice appeared to have enhanced their capacity for 1) generating review criteria as true desiderata; that is, their perceptions of the role of the computer in language teaching and learning were untainted by prior experiences both positive and negative; and 2) viewing applications via multiple perspectives; that is, for example, from the point of view of the language learner, of the traditional language teacher, or of the teacher who adheres to communicative language teaching principles. They were open minded in approaching a task that by nature provokes subjective judgements. Not having had prior opportunities to formulate strong opinions, their assessments can be considered unique. Future plans for the database project include the capacity for comparison of novice versus full-fledged CALL user evaluations. It will be possible, then, in future versions to compare and contrast reviewer evaluations based on level of experience as CALL users. Comparisons on this dimension will allow database users to view applications from multiple perspectives.

This group of teacher/reviewers, having read and discussed CALL design issues in the context of language teaching and learning practices, participated in generating the review criteria described below.

REVIEW CRITERIA

The group agreed that information typically included in software reviews such as titles, authors/vendors, distribution, hardware requirements, and population targeted was fundamental to these evaluations. Spaces and prompts for this information consequently heads evaluation guide sheets. Skills intentionally targeted, that is, those that are transparent in the design of the software application, were also noted in the initial identifier cluster of information.

Indices of program quality in terms of technical quality, content clarity, ease of use, navigation, and the nature of input and feedback were included as partially subjective measures in the second review cluster.

Accompanying these initial sets of information is the reviewers' prose description of the application. It was determined by the group that this description should be brief and objective and thereby serve as the base into which further subjective commentary would hook. This portion of the evaluation guide, then, represented an opportunity to simply describe what the particular piece of software looks like and what it ostensibly does. Opportunity for critical analysis was reserved for later sections.

In developing and refining the evaluation criteria, the group concluded that to investigate possibilities for use of the software from various perspectives, they would need to consider uses of the software potentially beyond or contrary to the transparent skills level for the population targeted. That is, rather than accept only the level(s) indicated directly or indirectly by the package, they would look further to subjectively and creatively determine alternative and expanded uses for additional groups of learners.

Expanding on proscribed level was also of necessity carried over into expansion of proscribed audiences as several of the packages reviewed were language arts programs designed for native speakers of English. Once having determined that a native speaker package was adaptable for ESL, additional specifications regarding adaptation, appropriate second language skills level(s) were indicated according to software external tasks envisioned.

Interpretative criteria for the reviews included: content complexity (this is in terms of the level of cognitive processing in conjunction with linguistic processing required by the content represented in the software); motivation (how engaging students would find the content and genre of activities available); "learning mileage" (how much mileage students and their teacher might get from the package both in terms of time and quality of language practice); and open-endedness on the part of the student (as defined by Young, 1988) and open-endedness in terms of the teacher who might wish to modify the program (Underwood, 1984).

In keeping with the goal of multiple perspectives on the software evaluated, evaluation guides included prompts to reviewers to analyze the viability and value of the package for:

-One student (single user)
-Two students (a pair of users)
-Groupwork (large group or whole class)

It is under these categories that reviewers were directed to expand on specific pedagogical approaches, both transparent and potential, for each of the three configurations. Reviewers found this section key to their thinking about using CALL as a catalyst for meaningful and creative interaction among students and the teacher. They considered ways to emphasize oral/aural practice of specific types of useful discourse around the package under review, then, within the context of each of these three configurations. Notes regarding strengths and weaknesses of the software design for single users, pairs and groups of users were also made in the context of configuration possibilities.

Finally, whether or not the kinds of language learning provided by the context of and activities in each package were superior by virtue of being on-line was to be indicated. That is, reviewers were prompted to determine whether the computer was an asset or whether the kinds of practice offered by the software could be done just as well off-line.

To prepare a database with optimal access for comparative purposes, visual tools in the way of icons were developed for several of the review criteria. Reviewers were to indicate the degree of quality of these measures by sketching in or numerically indicating the number of icons that correspond to their assessment. The scale extends from .5 icons (very poor) to 5 icons (excellent).

In field testing the evaluation scheme for the database, teacher/reviewers worked in pairs. As they were new to CALL, this served to enhance the review process in that comparison of perceptions came to mediate richer subjective assessments.

THE DATABASE

Reviewer evaluations were entered into a graphical database written in ToolBook (Asymetrics). The CALL software database, in its pilot form, consists reviewer responses to the criteria outlined above. Currently database users can access information concerning twenty-two software applications. They can also, as mentioned earlier, cross-reference applications by specified identifiers and compare evaluative information. Users are able to access reviews of application by specific platform or by potential uses as a whole-class presentation device, for example. In the same manner, users can contrast the transparent skills targeted with subjective reviewers' comments regarding uses beyond what a specific package prescribes. The architecture of the database allows users to add their own reviews and their own notes to any field.

FUTURE ENHANCEMENTS

Future plans include the capacity to access a list of software users to whom further questions can be directed, evaluations of software tools (word processing and spreadsheets, for example) and telecommunications applications. Information regarding distributor review policies will also be included and frequently updated. Users will eventually be able to access relevant book, journal and newsletter titles where they can find additional information regarding CALL software.

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COOPERATIVE CALL AND GENDER DIFFERENCES

LYDIE MEUNIER-CINKO

INTRODUCTION

The issue of gender differences in cooperative computer-based activities has been widely addressed in science classes, but never studied in cooperative Computer Assisted Language Learning. Considering that foreign language educators advocate the use of group work not only in classroom setting but also in computer assisted instruction, there is a need to address the issue of interaction in computer-based tasks. This paper outlines the effects of single-gender and mixed gender pairings in cooperative CALL. It investigates: 1) the impact of single- or mixed pairing on learning, and 2) the interaction patterns of mixed- and single gender groups during a computer-based foreign language task.

COOPERATIVE CAI AND GENDER DIFFERENCES

Studies investigating gender differences in the use of computers have indicated that males tend to be more interested in computers than females and that males use computers more than females (Collis, 1985a; Collis, 1985b; Felter, 1985; Fisher, 1984). Male and female preferences for typically gender-specific fields are often due to tacit tracking processes stemming from a hidden curriculum (Davies & Meighan, 1975; Fennema, 1987; Holmes, 1989; Sunderland, 1992). Studies show that parents are more likely to buy a computer and video games for their son than for their daughter (Levin & Gordon, 1989). Studies also show that the female's attitude toward computers stems from a lack of societal reinforcement of girls' interest in computers.

However, girls have been reported to show an equally positive attitude toward computers when given the opportunity to use them (Forsyth & Lancy, 1989). When enrolled in computer classes, for instance, girls are as skilled as boys in programming (Webb, 1985). Feldmann & al. (1991) suggest that gender differences may occur in some social contexts but not in others. The classes they observed in their study had a majority of females, and one class was exclusively female. In this context, Feldmann & al. suggest that the social climate may be different when there is a majority of males or females in a class. They also suggest that humanity courses using computer-based tasks might be considered less biased than courses traditionally seen as more male-oriented, implying that academic disciplines have an effect on classroom communication and interaction as well.

Anthropological studies indicate that females prefer interpersonal interactions, as opposed to purely factual exchanges (Steinem, 1991). Keeping this in mind, many females are reported to speak among each other about off-task topics which are relevant to them. At times, however, such interactions are viewed by both teachers and researchers as "intrusion of irrelevancies" (Cummings, 1985: 157). What is termed "irrelevancies" may be a matter of gender-specific interactive behavior. Cummings' conclusion about gender differences during a computer-based cooperative task in English studies clearly indicates a lack of understanding regarding gender-specific conversational patterns. Cumming's study leads to a negative picture of females who are perceived as talkative and off-task (Cummings, 1985; 157). This is a perfect example of how the hidden curriculum leads to a prejudgment even though there is the appearance of an objective argumentation.

In a study conducted among ESL students (Abraham & Liou, 1991), gender differences have been incidentally detected and interpreted as follows: "in the mixed pairs, the female assumed the role of typist, perhaps encouraging the male to dominate the discussion and decision making" (Abraham & Liou, 1991: 93). In Abraham & al.'s study, there were two mixed pairs and one female pair. In the first mixed pair, the male uttered 57% of the total words and the female 43%; in the second mixed group, the male uttered 79% of the total words, and the female 21%. In the female group, not much difference was noticed between the partners (51% and 49%). A similar study (Guntermann & Tovar, 1987) indicated that partners in female groups agree more among each other than partners in male groups -- males showed more antagonism towards each other, focusing exclusively on seeking information for the sake of information, and not for communication.

Siann & Macleod (1986) found that boys are socially dominant when working with girls around computers, and that girls become less motivated and less successful. This gender difference in computer use was explained by the authors in term of computer phobia. What Siann fails to mention, however, is that males naturally tend to be dominant in mixed-gender conversations as has been shown by anthropological research (Zimmerman & al., 1975; Steinem, 1991). For instance, Zimmerman & al. (1975) investigated mixed-gender conversations and gender-specific styles. Thirty-one conversations were taped in public places such as libraries, coffee shops, drug stores and the University of California. The data were composed of eleven mixed-gender conversations, ten male-only and ten female-only conversations. The findings indicated significant differences between same-gender pairs and mixed-gender pairs regarding the use of overlaps and interruptions. Overlaps are defined as an act of anticipating the end of a sentence spoken by an interlocutor while articulating it with a topic-related response. An interruption, on the other hand is considered as a violation of turn-taking rules whereby topical disarticulation is flagrant. Results showed that females use more overlaps than interruptions and that 96% of the interruptions result from men interrupting women. Interestingly, men rarely interrupt each other primarily using interruptions when speaking to women. Women use less overlaps with men than with women due to the fact that men tend to perceive overlaps as interruptions: "Male interruptions of women bring less social punishment than female interruptions of men" (Steinem, 1991). Zimmerman and West (1975) observed that in mixed-gender conversations men tend to infringe women's right to speak. As a result of male interruptions, the same study indicated that women tend to be more silent than men. Silence periods in single-gender pairs averaged 1.35 seconds, while they averaged 3.21 seconds in mixed-gender groups.

Female computer phobia has been described by Culley (1988) as stemming from an early tracking system which leads to a lack of equity in schools. The situation is cumulative to the point of hindering female students who attend required computer based classes. Computer phobia need not be an irremediable fact; female students need more attention and more help to overcome their "fear of the computer". Research shows, however, that instructors often devote their time to the most skilled students ignoring the need of students who most require assistance:

> *Computer rooms in most schools were regarded as male territory and girls reported being made to feel uncomfortable by the attitudes and behavior of boys [...] Classroom observations showed that very little effort was made to counteract the tendency of boys to dominate lessons [...] In the practical part of lessons boys would typically acquire the newest computers, those with disc drives and color monitors. Often girls would be elbowed out of the way and left standing in the rush, without access to a computer at all* (Culley, 1988: 4, 6).

In the classes depicted above, girls' interest for computer courses was very low, a finding that was reached by using a questionnaire. However, when Culley visited two girls' schools, class observations indicated that "computer studies was a popular option and computer clubs thrived" (Culley, 1988: 7).

Underwood & McCaffrey (1990) conducted a study including mixed-gender pairs and single-gender pairs. The purpose of the study was to find out about the effect of gender-specific interaction patterns in cooperative CAI. Students had three sessions: session 1 was an individual CAI session, session 2 was a cooperative CAI session, and session 3 was another individual CAI session. The effect of cooperative work was measured by comparing the results of session 3 with the ones of session 1. The results indicated that both types of single-gender pairs improved individual performance in session 3, but mixed-gender pairs did not lead to any improvement of individual abilities. The authors explain the lack of improvement of mixed gender groups by stating that partners had difficulty cooperating and that females tended to be dominated by their partners who naturally competed for keyboard control. Other studies (Culley, 1988; Siann & Macleod, 1986) indicated that females showed lower results when working with males, even though the same females had no disadvantage in similar tasks when working individually or in single-gender groups. Observations of mixed-gender group interactions were reported as follows:

> *Mixed-gender pairs showed clear social differences in that the boy, despite the girl's protests, continually leant over and pressed the keys when she was at the console but the reverse pattern was not observed. When girls seek help from boys, they resent it when the help was given practically (i.e., by pressing the appropriate keys) rather than verbally. Girls suffer from both implicit and explicit sexism which disadvantages them until they enter professional life.* (Siann and Macleod, 1986: 137)

COOPERATIVE CALL AND GENDER DIFFERENCES

The issue of gender differences in cooperative computer-based activities has been addressed in the context of mathematics, and the sciences, but barely mentioned in English studies, and never studied in cooperative computer-based foreign language tasks. Due to the fact that foreign language educators advocated the use of group work not only in classroom settings but also in Computer Assisted Language Learning, there is a need to address this issue. The goal of the present study is to examine the effects of single-gender and mixed gender pairings in cooperative computer-based foreign language tasks. The objective of this study are stated in the following research questions: 1) Do single- or mixed pairing effect post-test performance? 2) Are the interaction patterns of mixed and single-gender groups different? The following null hypothesis reflects the expectations of the study:

Ho: There will be no significant differences between males and females as to how much they learn.

Method

The research investigated the issue of gender-difference in computer-based foreign language activities as follows: sixty subjects were asked to volunteer from intermediate French classes at the University of Arizona. Subjects were asked to participate two hours: approximately one hour for pre-training and pre-test, 30 minutes of a French cooperative task at the computer, and approximately 30 minutes of post-tests. Each student was offered a $10 incentive to be part of the study. Each subject was randomly assigned to a partner of the same or opposite sex. There were ten female pairs, ten male pairs, ten mixed pairs. Subjects were asked to play the French version of "Carmen San Diego" for thirty minutes. This software involves 1) understanding language, 2) making decisions, and 3) manipulating computers. In addition, this software offered two kinds of knowledge: 1) descriptive vocabulary, and 2) cultural facts. Pre-tests and post-tests were designed to reflect both types of knowledge and were composed of two parts: 1) recognition of the descriptive vocabulary used in the software, and 2) knowledge of cultural facts introduced in the software. Videotape records of the session provided data on the nature of the interaction during the group activities. Students were working with Macintosh computers. A camera was set up with no operator in order to maximize ecological validity.

Results

General comparisons between male and female results: The difference between post- and pre-test scores was first established for all males and all females, regardless of the groups they were in. Results were subdivided into three categories: 1) overall learning, 2) learning of descriptive vocabulary, and 3) learning of cultural facts. The results of the t-test performed on the overall learning quota indicated that the difference between males and females was not statistically significant (See Table I). Females gained an overall knowledge Mean of 17.63 points, and males gained an overall knowledge mean of 15.20 points. The rate of overall learning was then broken down into 1) the learning of cultural facts, and 2) the learning of descriptive vocabulary. Regarding the learning of cultural facts, males outperformed females although differences were not significant. As to the learning of descriptive vocabulary, females outperformed males with a level of significance of 2.62 at a probability of .005<p<.01.

Group Effect: The results of the statistics performed on 1) overall learning, 2) the learning of cultural facts, and 3) the learning of descriptive vocabulary for a) each gender, and b) within each group are summarized in Table II.

Table I:

General Comparisons between Male and Female Learning (regardless of group)

	N	Mean	Std. error	t-value	p.level
Overall F Learning	30	17.63	1.34		
Overall M Learning	30	15.20	1.32	1.42	.05<p.<.1
F Learning Cult. Facts	30	15.62	1.33		
M Learning Cult. Facts	30	17.63	1.74	1.01	.1<p.<.375
F Learning descr. vocab.	30	19.72	2.24		
M Learning descr. vocab.	30	12.89	1.79	2.62	.005<p.<.01

Females show no difference in overall learning between same and mixed-gender groups. There is no negative effect of mixed gender group on either males or females. However, male-only groups (MM) have a negative effect on male overall learning although not statistically significant. Both males and females tend to learn more cultural facts in mixed gender groups, indicating a positive effect especially on

Table II: Comparison of Learning Rate Across Genders and Groups

	Overall Learning	Learning of Cultural Facts	Learning of Descriptive Vocabulary
Females/FF Groups	17.65	14.56	20.75
Females/FM Groups	17.60	17.75	17.65
Males/MM Groups	14.12	15.30	13.23
Males/FM Groups	17.35	21.29	12.20

males. There is no group effect on the learning of descriptive vocabulary. Although the difference is not significant, females tend to learn more descriptive vocabulary in same gender groups.

Discussion

The data from the experiment indicate that females and males tend to focus their attention on particular types of information: females tend to learn more vocabulary pertaining to descriptions and males tend to learn more facts. This observation is in accordance with findings in anthropological studies showing that females are more interpersonal than males and that they use a more descriptive and discursive language than males. Men exhibit more knowledge and facts during conversations. Anthropological studies also imply that women are most comfortable with affective and social meaning, whereas men prefer referential and factual discourses (Coates, 1986; Holmes, 1992; Scarcella et al., 1992; Tannen, 1990). Considering the fact that computers are particularly well suited to handle facts, it should be noticed that many CALL programs may be unintentionally biased against females. This observation has already been made by Chisholm et al. (1981) who stated that computer programs tended to be "sexist." Carmen San Diego is a piece of software which promotes both facts and a descriptive language. Considering there is a gender-specific trend toward a certain type of knowledge lends further weight to this hypothesis.

The data from the experiment also show that females are not negatively affected by mixed gender groups, which disconfirms the findings reported by Culley (1988) and by Siann et al. (1986). However, the figures indicate that females tend to show an adjustment when interacting with males: in mixed gender groups females tend to adjust to male factual preferences (with a higher learning rate) and to lower their interest of the descriptive part of the software. On the other hand, while males tend to assert themselves with facts in mixed gender groups, there is no adjustment on their part to a more female interest, i.e. descriptions. This trend confirms findings in anthropological studies showing that females are more likely to adjust to male-specific topics, that males end up speaking as experts on topics they accept to discuss, but that males consider trivial speaking on more personal, i.e. more female-specific topics, showing no adjustment (Steinem, 1991). Interestingly, males in same gender groups of this experiment show significantly lower results in the learning of factual knowledge. Video tapes revealed much less cooperation in MM groups as opposed to the other groups (FF and FM). It was observed that females seem to be conducive to more cooperation and discussions with their male or female partner. In MM groups, however, males don't interact as much, and the one who controls the mouse often makes branching decisions without consulting his partner.

The results of this study show interesting trends that merit further investigation with a larger number of subjects. At the very least, this study gives us insights regarding possible negative or positive effects the group has on the individual. This study also indicates that a software may fit certain types of personality and not others, and that designing software to address more than one type of information gives more flexibility and may interest a larger audience. This study also established that females are not at a disadvantage in a CALL group activity at the university level. This study confirms Feldmann's hypothesis (1991) that humanity courses using computer-based tasks might be considered less biased than computer assisted courses traditionally seen as more male oriented.

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PRESENTER'S BIODATA

Lydie Meunier-Cinko has degrees in German, Applied Foreign Languages, FL translation and interpretation from the University Lyon II, France. She has an M.A. in French from Pennsylvania State University, and she is now a doctoral candidate in the interdisciplinary program of Second Language Acquisition and Teaching at the University of Arizona.

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PHILIPS PROFESSIONAL COMPACT DISC INTERACTIVE (CD-I): LOW COST, SIMPLE TO USE, AND A WORLD-WIDE STANDARD FOR EDUCATION AND INDUSTRY

BERNIE MITCHELL AND CRAIG ZIMMERMAN

ABSTRACT

Although CD-I is a consumer based home entertainment product, the professional business of CD-I is providing cost-effective interactive multimedia solutions for education and industry. CD-I is a simple to use interactive system that incorporates photographic quality imagery, up to 16 simultaneous soundtracks of audio, animation and motion video all on a 5" disc that can be played anywhere in the world.

This workshop will focus on International Language Learning programs, educational and industrial training programs that have been created on Philips CD-I.

Bernie Mitchell, National Marketing Manager for Philips Professional Interactive Media Systems will present the complete line of Philips CD-I products; the low cost consumer player, the laptop portable CD-I player, the industrial CD-I player, the developer's reference player and the CD-Recordable unit. Mr. Mitchell will also demonstrate a variety of CD-I titles that showcase different production techniques including full screen-full motion video.

Craig Zimmerman of OptImage will demonstrate Media Mogul, an easy to use CD-I authoring system that allows non-programmers to create CD-I titles, quickly.

PRESENTER'S BIODATA

Bernie Mitchell, has been actively involved in interactive optical media since 1979, when he created an interactive videodisc to teach college chemistry. As National Marketing Manager for Philips Professional Interactive Media Systems, he has marketing responsibility for professional Compact Disc Interactive (CD-I). He lives with his wife, 2 children, a dog and a rabbit beside a lake overlooking the Smoky Mountains. Unfortunately, with his travel schedule he is hardly ever home.

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MYTH: ARTIFICIAL INTELLIGENCE IS DIFFERENT FROM WHAT WE'RE DOING NOW

GEORGE MULFORD

We can distinguish three headings under which this myth might be true: goals, approaches, methods. If your goal is to use computer programs to nudge students towards learning, and if your approach is to try something and see what happens when students interact with it, and if your method is to conceive the learning environment in general terms and then implement a series of specific demonstrations of your generalized system, then what you're doing does not differ essentially from the way most Artificial Intelligence workers would proceed. If your series of specific demonstrations of your generalized learning environment never goes beyond being a series with one member, then you are solidly within the Artificial Intelligence paradigm.

In other words, Artificial Intelligence development depends heavily on the same ingredients that have always assured quality in program development: a highly educated initial guess about what might work, a brilliantly creative conceptual leap, and a lengthy and very open-minded refinement and validation cycle. The Artificial Intelligence imprint can be seen most clearly, not as a radical departure from any of that, but as a characteristic slant, an attitude of mind, that pervades the whole endeavor. The slant goes something like this: the program process should capture some essential feature of the mental process.

It is on the methodological level that this slant has produced the most resounding successes so far. Every Hypercard or Visual Basic user has experienced the economy of effort that comes with object-oriented program design. An "object" is a typical AI artifact. Our intuitive conception of an object endows it not only with a location but also with properties and behaviors. An AI approach to modelling the object, then, was to include the properties and the behaviors in the data structure that represented the object. This turned out to be a good idea. Object-oriented data structures do in fact enable people to think clearly about the objects on their screen, to manipulate them in intuitive ways, and to keep track of their interactions with a minimum of mental clutter. Asking (or most probably introspecting) about a thought process, and then modelling that thought process computationally, had in this case a very useful result.

Another example of the methodological pervasiveness of AI is rule-based programming. The development of rule-based programming methods has been at the heart of AI research, and the typical AI system can be analyzed as a hierarchy of rule interpreters, with the most task-specific rules being evaluated or translated into more general rules, and these in turn giving rise, several layers down, to the primitive, executable symbols of the kernel language underneath. Like object-oriented programming, rule-based programming is sufficiently similar to human thought processes in many domains that it makes possible enormous efficiencies. To offer a small but illustrative example, I came to AI programming with a history of classic CAI error-correction behind me. I had figured out how to diagnose student errors in the production of French verb forms, and had even described French verb morphology in a data structure that resembled, as much as Icould make it do so, my own concept of how stems and endings are chosen for a given conjugated form. That structure was twice realized in procedural languages, once by me, at a cost of several months each time. Using rule- based techniques, a programmer (admittedly a better one than I) duplicated it in weeks, and the result was vastly more easy to understand, explain, and debug than the previous versions.

AI, then, gives us good tools to tackle complex computational tasks. Most of us who develop programs at all should be using those tools, and most of us probably will, to some extent, in the years to come. Does that mean we will be doing AI or merely (as many rather dumb commercial programs claim) "using AI techniques?"

Of course, it doesn't matter as long as our programs serve their purpose. I have described at previous CALICO conferences an Adventure Game (at conferences we sometimes call it an Exploratory Microworld) which places the second language student in an exotic imaginary environment. The student's efforts to cope with that environment by typing sentences in the target language are supported by a set of error correction routines that rely on knowledge of the world-- semantic knowledge --to unscramble otherwise incomprehensible language-learner talk. We "used AI techniques" to build that program. Our methods were certainly AI methods; yours should probably be too. Our approach was an AI approach, certainly; microworlds with natural language interfaces are in the mainstream of classic AI programs. That approach led to two rather interesting and even useful programs. I can't escape the feeling, however, that the AI slant might bear on language-learning methodologies in a more direct and profound way if our very goal were an AI-tinged goal: if we were able to develop data structures or programming procedures that would capture significant aspects of the mental process of language acquisition itself. Others on the panel, I know, agree with me. The reason we can't, even after all these years, point to unambiguously successful attempts to do that is that those processes are fiendishly hard to describe. One example.

The most ambitious project I have been associated with attempted to model one instance of one aspect, not of language acquisition, but of language use, which is to language acquisition as a stuffed bulls-eye to a running hare. We tried to build a representational structure that would capture the salient information contained in a single photograph. Our program was to be able to converse, not about the objects in the picture (too much detail there), but about the people, their history, emotions, and plans, insofar as they were implicit in the scene represented. This was our first attempt at modelling Belief and Intention, subjects much discussed in the literature of Natural Language Processing, and we thought it would bring us a big step closer to realistic dialogue--presumably dialogue with students. The photograph showed a woman in a car, looking over her shoulder as she backed down a driveway. Directly behind the car, and in its path, was a bicycle on its side. In the foreground, a boy was holding up his hand in an expression clearly intended to draw the attention of the driver.

We were able to make a very competent program that knew all about the woman's plan to back down that driveway and the boy's plan to prevent her from running over his bicycle. Our program could even generate sentences about these plans. The program never got to use all this knowledge in aconversation with a student, however, because the knowledge was invalidated when we presented our analysis of the photograph to fellow programming team members and participating language instructors. Everyone who saw that picture, as it turned out, believed he or she understood it. Yet no two people would list the same set of self-apparent facts to describe it. For some, the woman was the boy's mother and the bicycle the boy's bicycle. For others, the boy was a stranger who happened along and witnessed the scene. For some, the boy was attempting to stop the woman from running over the bike. For others, it was too late; the bike had just been wrecked. For still others, the woman had seen the bike and stopped. She was about to get out of the car and give that boy a thorough scolding. Others were unable to list more than two facts about the picture without invoking the boy's father, who was (it was pretty well agreed) not in the picture, but who had (obviously to some) given the boy the bike and (of course) told him never to leave it in the driveway.

Things got even worse when we attempted to pin our committee down to the usefulness of this AI application for language teaching. All agreed that it was a frightfully clever conception and terribly promising. However, for one, it was implicit in our methodology so far that we were going to present the picture to the students and have them describe it. The program would tell them if they were right or wrong. (Of course, by this time we knew that it would be ill-advised to call any interpretation of that picture "wrong.") Others believed that the students would ask the program questions and so elicit the program's prepackaged view of the bicycle's family and their history. Most could see no reason why students would want to do that. Where was the motivation to discourse with our intelligent machine? Some thought students should be able to argue with the program, the way they would argue with each other if the picture were used as the focus of a class discussion. The idea of making a rule base rich enough to allow the program to follow two sides of an argument (its own and the student's) and judge the validity of both was the best idea we, collectively, had. It got us the closest to what real language teachers do. It also elicited a rare moment of total unanimity on our team: we all agreed that we would be crazy to attempt it. We never wrote the grant proposal to continue our work with that photograph.

This cautionary tale is not intended to signify the impossibility of meaningful work in AI for language acquisition. Rather, my purpose in telling it is to let others know that even an experienced group of AI developers may be incapable of telling a bad idea from a good one without investing more work in it than they might have liked. At least we did have enough experience to know that a little prototyping and a lot of discussion with people outside the team are good ways of trying an idea out before investing years of work in it. Artificial Intelligence gives us the power to attempt very ambitious things, but the ambitiousness of a project does not ensure its success. Reality checks, early and often, are the only safeguard.

In this respect as in so many others, to return to my original theme, Artificial Intelligence is not at all different from what naturally intelligent developers do, or ought to do.

PRESENTER'S BIODATA

George W. Mulford, University of Delaware, was project manager for the five-year development effort which produced the Foreign Language Adventure Games and is the author of the French Adventure Game.

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ASSESSING AN INTERACTIVE VIDEODISC

DONNA MYDLARSKI AND D. M. PARAMSKAS

ABSTRACT

This paper deals with formative evaluation conducted in the *Vi-conte* project. Two versions of software, for two-screens and one-screen respectively, were developed for a DOS environment, the latter version running under Windows. Assessment techniques used included participant observations (in which learners "think aloud"), software critiquing by instructors and fellow developers, student questionnaires and instructor interviews. Information thus obtained generated initial hypotheses about instructional design, learner interface and computer usage.

Besides being a learners' tool, *Vi-conte* has already served as the basis for research evaluating educational technology. One study used the *Vi-conte* materials to compare linear and interactive video in the teaching of university-level French (San Diego State University). At the time of writing, other research designs are being elaborated for studies at the universities of Ottawa and Calgary, Canada, as we move from exploratory research to grounded theory and, eventually, hypothesis testing.

Time will be allowed for questions at the end of the presentation.

PRESENTERS' BIODATA

Donna Mydlarski is Director of the French Centre, The University of Calgary in Calgary, Canada. She has taught French for over twenty years and has been involved in a variety of CALL projects during the past fourteen years: *CLEF, PROMPT, Dictate, Word Patterns* and *Vi-conte.*

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USING VOICE INTERACTIVE MULTIMEDIA IN FOREIGN LANGUAGE TEACHING

CAPTAIN CASEY NEFF

In a perfect world, a student who is studying a foreign language would do it in a total immersion setting, preferably in a region in which the target language is spoken. He or she would be required to speak only the target language and initially rely on a combination of language and an informal sign language system to communicate in an unfamiliar situation. With budgets being what they are, however, the chances of achieving this nirvana appear rather slight. Therefore, we must make do with a wise mix of the many pedagogical methods currently available. Fortunately, because of technological advances, many of the methods utilized in achieving this goal are evolving rapidly, thereby opening up possibilities only dreamed of before. While the dominant ancient techniques, such as lecturing from the podium, grammar drills at the blackboard and rote memorization of contextual-appropriate phrases and utterances, have grudgingly accommodated the occasional technological "improvement," these technologies have mostly been seen as supplements to the traditional methods. What we are faced with, then, is a continuing evolution of pedagogical theory. As in medical science, however, educational technology is now evolving much faster than the doctrine concerning its proper place in the pedagogical universe and there are now products available that promise to revolutionize the way students learn a foreign language. One of the rising stars currently visible on the educational horizon is Voice Interactive Multimedia.

Before we examine the revolutionary capabilities of Voice Interactive Multimedia, let us first examine the current state of the technological art. Inter-Active Video, or IAV, is quite different from and more primitive than Voice Interactive Multimedia. Inter-Active Video has become the technological darling of the educational community because of its intriguing marriage of emerging hardware, such as the 386-based computer and the laser video disk player, with software, such as IconAuthor, which allow the video disk's contents to be manipulated at will. Unfortunately, the name itself is a misnomer and the system as a whole provides a meager educational return on the money and time invested in it. It is not the fault of the technology, but of those who developed it - they have made it out to be more than it is capable of being. The system is not truly interactive - the student watches a short audio-video segment in the target language and then answers a series of questions concerning the segment. The questions and responses may or may not be in the target language, depending on whether the language utilizes a Roman or non-Roman based alphabet. There are many drawbacks to this current system: the student is still a passive participant, the exercise is preprogrammed and allows no free play and all responses are input using the keyboard or written on a sheet of paper. While all of this is good - exposure to any scenario with native speakers and set in a genuine location can only help the student - it fails miserably to develop one of the most difficult and critical language skills: the ability of the student to converse in the target language. The student does not have to say a single word in the target language throughout the entire lesson; indeed, he *cannot* because the technology does not allow it! Inter-Active Video therefore does not live up to its name or its true potential; instead, it serves as ammunition for those who oppose integrating technology into the classroom because of the cost and labor involved in training faculty. This is not interactive in any sense of the word.

The next logical step, then, is to develop a true interactive potential and move from video to multimedia. The need here is for a computer-driven system that can recognize and respond to voice commands. Voice Interactive Multimedia is just such a system and can be assembled now from commercially available components. The Voice Interactive Multimedia system, like its IAV predecessor, is assembled on a 386-based computer. To this platform the following are added:

a. Microsoft Windows 3.0.
b. Microsoft DOS 5.0.
c. IconAuthor.
d. A VGA or SVGA color monitor.
e. 4 megabytes of RAM.
f. 20 megabyte hard disk drive (minimum).
g. A Scott Industries' SIR Model 20 Speech Recognition Board (SRB).
h. A Video Overlay Board.
i. A Pioneer LaserVision laser video disk player, model LD-V4200.
j. A microphone.

When assembled and programmed, a Voice Interactive Multimedia system would operate something like this: while viewing a pre-selected video segment, the student is confronted at various intervals with questions, either oral or displayed on the screen. Choosing from a set of three to four possible responses, the student utters what he believes to be the appropriate response. If the utterance is not recognized, the computer flashes a message to the student, informing him that his last response was unrecognizable and to respond again. If the computer recognizes the utterance, it moves in accordance with pre-programmed instructions to the next portion of the video logically corresponding to the student's response, wherever this segment may be physically located on the disk. The student then views this excerpt, responds orally to yet another question and is again moved to the appropriate continuation. In this more-perfect world, the student is an active, vocal participant in the learning process and can readily witness the consequences of giving an incorrect response to a question. What we then have is a simulated foreign language experience of increased realism, where the student is exposed to the sights and sounds of the target culture and is made to feel as if he were there in the restaurant, at the doctor's office, or at the marketplace.

The three great advantages of this system over its predecessor is the fact that the student must actively listen to and look at what he is hearing and seeing in order to correctly answer the questions posed to him, the speed at which the video can move from segment to segment, and the relative ease in setting up such a lesson for the students.

It is very easy for the instructor to determine if the student does not fully comprehend what is happening in the video and what is expected of him. Any appropriate response in any situation will cause the scenario to veer off in a completely logical but unintended direction. An example would be a student playing the part of a witness to a crime. When asked by a militiaman what happened, the student is given three possible responses: "I saw what happened." "I did not see anything." "I did it." Obviously, in a real situation, the reaction of the militiaman would be quite different, depending on the student's response. One of these responses will have very unpleasant consequences for the student, just as in real life a miscue such as this can have unintended repercussions.

The second advantage to this system is the speed at which it reacts. Until now, Voice Interactive Multimedia has been limited by the requirement to use a "smart" or programmable videocassette recorder (VCR) to find and play the appropriate video segment. Since it has to physically manipulate the video tape, the wait times between the student response and the beginning of the next segment can vary from four to more than ten seconds - an eternity when trying to hold the attention of student. By using a laser video disk player, the access time is now in milliseconds and the wait times between student response and follow-up segment are now one to two seconds.

The third and final advantage is the software required. Previously, to use a programmable VCR in Voice Interactive Multimedia, it was necessary to code all the instructions in an actual programming language, such as Microsoft C or Borland C++. While quite powerful, these programs are also quite obtuse and user-hostile to the novice. With a laser video disk player, however, the same program used to set up an IAV lesson can be used to now set up a Voice Interactive Multimedia lesson. Once set up, it can be re-used indefinitely.

The technology necessary to set up an Voice Interactive Multimedia station for student use is readily available now. Creating an actual lesson for student use is a more delicate task. Currently, there are no laser videodisk products available which are specifically designed to support Voice Interactive Multimedia. Instead, most disks tell a story in linear fashion from start to finish. These disks are also usually a boy-meets-girl type scenario to maintain student interest. The series produced by the British Broadcasting Corporation, "Good-bye, Summer," is such an example. While many of these products currently available are of excellent quality and educational value, they are not specifically designed for Voice Interactive Multimedia. If it is set up as an IAV lesson, it is easy to come up with a suitable video segment and a series of questions based on the events in the story for the students to answer. However, there is no provision for diverging story lines or any participation on the student's part beyond typing in answers on the keyboard. When Voice Interactive Multimedia becomes the standard, video disks will be available to teach a specific grammar point or vocabulary necessary for a student to deal with a certain situation in a foreign language. They will have diverging story lines and will most likely even come from the producer as a package, with a video disk, transcript, summary, and scenarios complete with questions and suggested responses already programmed. Given the pace of recent developments (three years ago 286-based computers were the industry standard and 386-based computers were still somewhat rare; now a 386-based machine is considered rather puny) and widespread industry interest, it is only a matter of time until the hardware and software necessary to create such a learning environment for the student becomes readily available.

THE BREAKTHROUGH

Computer speech recognition is a computationally intensive task. The United States government conducted extensive research into automatic speech recognition in the 1970's and concluded that the program was at that time unfeasible, due to technological difficulties. In fact, the computers were able to conduct limited ASR, but the problem the engineers were unable to overcome was speed. The computer was not able to process information fast enough in order to give a prompt reply to the received utterance. Microprocessor technology and waveform research have both come a long way in the past 20 years, and desk-sized computers have become desk-top computers. It is now feasible to process the data fast enough to give an almost immediate response. The algorithms required for ASR are now usually implemented on a very fast microprocessor that is dedicated to the task. This microsystem, called a **recognizer**, is typically a third-party circuit board attached to a host computer. The Scott SIR Model 20 is such an implementation. An application program (here, IconAuthor 4.1) executing on the host computer uses the recognizer as a speech input device. The recognizer identifies the utterances of the person speaking and presents the application with a number or text string that identifies the recognized word. The application is responsible for acting on the recognizer's input and for controlling the dialogue with the speaker to achieve the application's objectives. Before a speech recognizer can identify an utterance as being a particular word or phrase, it must be given spoken examples of each of the words that it is to recognize. This process is called **training**. The set of words that have been trained for the recognizer is called the recognizer's **vocabulary**. A speaker-dependent recognizer is sensitive to the vocal characteristics of a specific speaker as well as to the universal phonetic characteristics of human speech. For this reason, a speaker-dependent vocabulary must be trained by the *same* person that intends to use it. When a vocabulary trained by one person is used by another, the differences in vocal characteristics confuse the recognizer and cause it to perform poorly, even though the speech patterns are similar. In contrast, Scott Industries' *Coretechs* system, such as the Model 20 Speech Recognition Board, is speaker-independent. This means that the recognizer may be used without degradation by people who have not participated in the training of its vocabulary. Such a system ignores the many variations in vocal quality, loudness and rate of speech that distinguish one person's voice from another's, locking instead onto the universal speech patterns that make each word in the vocabulary unique. The distinctive advantage of a speaker-independent vocabulary is that the end-user doesn't have to train it. For foreign language instruction, such a capability is invaluable; the student cannot be expected to train the vocabulary for the recognizer if he is unable to pronounce it.

The most severe limitation on the system is currently the fact that the Scott SRB is what is called an isolated-word processor. In order to recognize a word correctly it requires that the word be spoken with a small amount of relative silence preceding and following it. It can properly recognize short phrases composed of two or three words when the amount of embedded silence between them is reasonably short because it treats such a phrase as one word. The maximum length it will recognize is approximately four seconds. Constructing a vocabulary of up to 400 words is currently feasible, although a vocabulary of 15 to 40 words is sufficient for most applications.

A PRACTICAL APPLICATION

Now that most of the technical difficulties have been overcome, it is time to move on to putting this into practice. Since disks custom-made for Voice Interactive Multimedia lessons are still on the drawing board, we must make full use of what is currently available. The first step is to determine the grammar and/or vocabulary points to be emphasized and translate them into specific responses to be elicited from the student. Then, questions must be formulated which have the desired utterance as one of the answers. The next planning step is to find an appropriate video segment for the student to view. Since there are no laser videodisks with diverging story lines currently available, one must make do with what is presently available. Some compromises will have to be made with regard to both plot and utterances, but a short 5-10 minute lesson can be created with moderate difficulty. Initially, the first few lessons created will consume inordinate amounts of time, but after the initial commands, procedures and pitfalls are discovered and mastered, creating lessons becomes much easier and quicker. The final step is to train the vocabulary for the recognizer. This may seem to be out of logical sequence, but this is the most difficult and important part of the lesson and should be done only when everything else is already set. Although a vocabulary can be created with as few as one speaker repeating the utterances ten times, the greater the variety and number of repetitions, the better the probability that the SRB will correctly identify the student's utterance. The ideal situation for this is to have a minimum of ten speakers each pronounce the word or phrase a minimum of fifty times. Since each pronunciation by a speaker is in some way different from all others, the SRB will, with each repetition, build a better and more complete model of the sound waves representing that utterance. It will be able to identify and codify central common characteristics, such as pitch, tone and emphasis, and discard minor variations in accent and volume. It is more important to have a greater number of speakers than to have fewer speakers provide more repetitions, since this will provide more tolerance in analyzing the students' utterances.

CONCLUSION

The amount of human knowledge is nearly doubling every ten years, thanks in many ways to technology. While many in the educational community have openly embraced emerging technologies and have worked tirelessly to incorporate them into their curricula, to this date technology has promised more than it was capable of delivering. Now, with the advent of automatic speech recognition, true Voice Interactive Multimedia is possible. It will soon be feasible to provide the student a foreign language experience of increased realism, where he will be an active participant and forced to actively use and develop all his foreign language skills. It will be, as the saying goes, the next best thing to being there.

PRESENTER'S BIODATA

Casey A. Neff, Captain, U.S. Army, holds a Master's Degree in Russian Literature from Cornell University. A self-taught computer specialist, Captain Neff's areas of interest are in Automatic Speech Recognition and Voice Interactive Multimedia. A Foreign Area Officer specializing in the former Soviet Union and Eastern Europe, he is currently assigned as an Assistant Professor of Russian at the United States Military Academy at West Point, N.Y.

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IS THAT WHAT YOU WANTED TESTED? TESTING COMPUTER AIDED LANGUAGE TESTING (CALT)

JOSÉ NOIJONS

ABSTRACT

Cito, the Dutch Exam Board is responsible for most examinations in secondary education in the Netherlands. Part of their task is to advise teachers on methods of testing in the classroom. Until recently this meant that teachers attended seminars and workshops at which staffmembers of Cito discussed (new) methods of testing the various language skills, paying much attention to validation land reliability, criteria which tend to score rather low in everyday classroom practice. For this purpose various checklists were developed that helped teachers ascertain whether the tests they used came up to par.

With the arrival of CALL-material that included tests and exercises it was felt that the conventional checklists were insufficient and that a special adaptation for CALL had to be made. This seemed all the more relevant as much CALL-material looked attractive enough but was clearly lacking in validatory terms: the possibilities of the computer and the inventiveness of the programmers mainly determined the format of tests and exercises, causing possible harm to a fair assessment of pupils' language abilities. The checklist has the following format: a division is made between test *content* and test *administration*, before, during and after the actual test taking. It is hoped that such checklists may give teachers some support towards developing good classroom tests and help them recognize valid land reliable exercise/testing modules in existing CALL/CALT.

PRESENTER'S BIODATA

José Noijons is a staffmember in the languages department of Cito, the Dutch Exam Board. He has been involved in the development of tests of speaking, writing and listening comprehension. His current work in CALL is in interactive testing of listening and speaking and in electronic item banking (for examinations in literature). Future projects may be the development of computer adaptive tests, using the scaled (listening) items of preceding exams.

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THE INTERACTIVE TESTING OF LISTENING

JOSÉ NOIJONS

ABSTRACT

Cito, the Dutch Exam Board is responsible for most examinations in secondary education in the Netherlands. One component of the examinations in languages is the listening comprehension test, which is based on taped interviews in English, French, German, Spanish or Russian. The maximum duration of a test is about 45 minutes and its usual format is listening samples on cassette accompanied by multiple-choice times in a test booklet.

This method of testing is particularly useful when (large) groups of students must be assessed at the same time. However, efficiency is low as response pauses are fixed and responses have to be scored afterwards. It was felt that especially with the testing of individuals an interactive test would increase efficiency greatly. Also, students' ability could be improved if a version could be made to practice listening comprehension.

For this purpose Cito has developed an interactive test of listening comprehension, using a so-called voicecard. There used to be storage-impediments, but compressing procedures have now made it possible to store the listening samples digitally. Two versions exist: one in which students are given feedback when they choose an incorrect answer, after which a sample may be played again. The other version is like the regular test as described above, but administration time is greatly reduced and scoring takes place automatically.

The development of the test will be discussed and some samples will be produced. There will be special reference to the validatory and reliability aspects of this type of tests.

PRESENTER'S BIODATA

José Noijons is a staffmember in the languages department of Cito, the Dutch Exam Board. He has been involved in the development of tests of speaking, writing and listening comprehension. His current work in CALL is in interactive testing of listening and speaking and in electronic item banking (for examinations in literature). Future projects may be the development of computer adaptive tests, using the scaled (listening) items of preceding exams.

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HUMAN PERFORMANCE WITH INTERACTIVE VIDEODISC TECHNOLOGY: THE ELEMENT OF HUMAN INTERACTION

LINDA NORTHRUP

"Interactive", used to modify videodisc technology applied to foreign language learning, is most often taken to imply interaction between a single learner seated in front of a videodisc workstation, responding to visual, audio and/or textual stimuli, and progressing through learning activities designed to increase his or her knowledge of a given foreign language. Interactions take place between the machine and the student, and therefore lack the elements of communicative language learning necessary to effective foreign language learning. Given the constraints of open-ended answer analysis, language choices are often limited to selecting within a series of predetermined responses. Students spontaneously produce little in the target language. This is not to denigrate the usefulness of interactive videodisc as we know it today. The advantages of combining visuals, sound and text to guide students to a better understanding of the target language are numerous and well worth the effort of making this technology available to as wide a range of language students as possible. However, cooperative learning, the simple pairing up of students before a language learning task, will add the oral production dimension missing from the current design of most language videodiscs, which tend to assume a man-machine interaction from the start. Students working together toward a common goal will discuss the language learning activity, and can easily be convinced to do so in the target language. This provides them with invaluable oral practice, that need not be constantly subjet to review and correction, providing an added dimension of student-student interaction, the type of human interaction inherent to real communication. They can work through problems together and thereby test hypotheses cooperatively.

This paper will present the results of a descriptive study designed to evaluate the richness of the interaction taking place within pairs of adult students of English as a Foreign Language working together on an interactive videodisc.

EXPERIMENT

The videodisc activity took advantage of an existing data base on Great Britain (Domesday Disc, BBC) which included several collections of still pictures allowing for surrogate walks through villages, houses, etc. A surrogate walk through an English country cottage was repurposed for use in this study. An exercise was designed to give students a chance to explore the house freely while using the target language in an open-ended format, a production activity intended to solicit speculation about the inhabitants of the house. Interactive videodisc technology allowed each pair to explore the house as it wished and build its own itinerary through the house, while obliging them to negotiate this exploration between them. They had to make cooperative decisions about which parts of the house to visit and which direction to take to get to the desired rooms. It was also necessary to fulfill the linguistic objective of speculating about the inhabitants of the house (in this case using various expressions of modality used for hypothesizing and speculating, varying degrees of certainty and doubt that had been inroduced and worked on in previous class sessions).

Seven pairs of adult students and their instructor were filmed working on this activity. These adult students were enrolled in continuing education English as a Foreign Language courses at the Centre de Formation Continue Langues at the Université Stendhal Grenoble 3, in southwestern France, in two separate courses requested by their employers. They worked for two different European nuclear research facilities in Grenoble, where English was the official language of communication on the job, though their actual use of English in the professional setting was often limited. Both groups tested at the intermediate level at the beginning of their courses and pursued very similar language learning goals throughout.

Table 1: Number of exchanges per pair during the 45-minute interaction

	total number of exchanges	teacher exchanges	student A exchanges	student B exchanges
pair 1	692 (100%)	206 (29.8%)	225 (32.5%)	261 (37.7%)
pair 2	450 (100%)	152 (33.8%)	124 (27.5%)	174 (38.7%)
pair 3	576 (100%)	205 (35.5%)	199 (34.5%)	192 (33%)
pair 4	440 (100%)	108 (24.6%)	170 (38.6%)	162 (36.8%)
pair 5	742 (100%)	171 (23.1%)	274 (36.9%)	297 (40%)
pair 6	612 (100%)	182 (29.8%)	204 (33.3%)	226 (36.9%)
pair 7	852 (100%)	213 (25%)	306 (35.9%)	333 (39.1%)
averages	624 (100%)	176 (28.2%)	214 (34.3%)	234 (37.5%)

45 minutes of interaction per pair were transcribed and analyzed descriptively to assess the richness of the interaction which took place between the students and their instructor, who was present to facilitate navigation through the house and to serve as a resource person as the need arose. Discourse topics and language functions used by the three members of each group during the interactions were analyzed from a pedagogical point of view, using the precepts of the communicative language learning approach, in order to assess the students' use of the target language to express communicative functions. Categories were therefore created based on the corpus at hand, given the novelty of a cooperative learning set-up with interactive videodisc, and also in an effort to respect the communicative approach to foreign language instruction.

RESULTS

Analysis of the transcripts of the seven pairs demonstrates that interactive videodisc technology applied to foreign language learning coupled with cooperative learning techniques in an open-ended exploration activity provide ample opportunity for students to express themselves in the target language and do so with spontaneity, complexity, and in great quantity.

Number of interactions

The analysis of these 45-minute segments of human interaction taking place during a language learning activity generated by interactive videodisc establishes that, in quantitative terms, the three participants produce a great deal of interaction in the target language. An exchange is defined as an attempt to participate in the discussion, without necessarily taking full control of the discourse. Though the teacher participated fully, she did not dominate the interaction, making an average of 176 exchanges in 45 minutes, 28.2%, less than a third, of the total number of exchanges. The two students together occupied 71.8% of the interactions, for an average of 448 exchanges. Clearly, this much student oral participation indicates a very high level of the sort of interaction that interests language teachers, and that the interactive videodisc can stimulate such interaction It is interesting to note the variation between groups, some much more talkative than others. The total number of exchanges range from 440 to 852. This can possibly be attributed to differing personalities and group dynamics within the groups themselves. Nevertheless, even within the less loquacious groups, large quantities of the target language were being produced.

Use of the native language

This experiment demonstrated students' ability to restrict themselves to the target language during this type of language learning acivity. Despite the voluminous interactions, very little of the native language was used, particularly in the first six pairs. Table 2 gives the number of interjections in French (the students' native language), a remarkably low number considering that 45-minute interactions are the basis of the analysis. Each interjection does not necessarily represent an entire sentence. They were often native language renditions of a missing word in the target language, and therefore a request for help from the teacher. At other times they were spontaneous exclamations uttered in the native language, exclamations that are extremely difficult to master in a foreign language.

Discourse topics

Six discourse topics were developed based on the corpus of the experiment. These included instructions, navigation, metalinguistic discourse, screen reference,

Table 2: Total number of exchanges and native language use by pair

	total number of exchanges		native language interjections
pair 1	692	(100%)	10
pair 2	450	(100%)	16
pair 3	576	(100%)	23
pair 4	440	(100%)	12
pair 5	742	(100%)	36
pair 6	61	(100%)	38
pair 7	852	(100%)	118
averages	624	(100%)	36,1

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Table 3: Language functions inventoried during the 45-minute interaction.

language functions	averages
acquiescing	38.6
agreeing	29.3
apologizing	3.9
asking for confirmation	81.0
asking for expansion	29.4
asking for help	19.1
asking for identification	10.1
asking for location	7.1
asking for repetition	7.8
asking for wants	6.1
attending	13.3
certainty	2.6
comparison	0.1
compliment	0.3
comprehension	23.3
comprehension check	1.8
confirmation	47.5
correcting	8.7
describing action in progress	8.0
describing objects	24.9
describing people	3.4
describing places	23.6
disagreeing	5.3
error	2.4
exasperation	0.7
expanding an idea	4.7
explaining	62.2
expressing dates	3.1
expressing wants	11.4
giving help	31.4
giving instructions	25.0
giving opinions	22.7
hypothesizing	45.1
identifying	36.4
impossibility	4.4
incomprehension	0.6
intention	1.7
interest	2.6
joking	4.9
lack of knowledge	5.7
locating	43.4
non-confirmation	6.4
obligation	0.1
permission	0.6
possibility	4.7
proposing help	3.3
reading screen	6.4
reformulation	0.6
refusing	0.4
repeating	50.8
requesting	4.1
resignation	0.3
satisfaction	3.3
selfcorrection	0.6
suggesting	44.4
surprise	16.3
total	845.9

commentary, and personal reference. They are defined as follows (numbers and percentages refer to the average number of occurences of each topic and its percentage of the total number of discourse topics):

Instructions: (3.7, 3%) Students sometimes made reference to the instructions pertaining to the learning task, whether to carry on in English, etc.

Navigation: (28.3, 22.8%) All references to navigating inside the house, which direction to take, where to go, etc., as well as discussion around the use of the interactive system are termed navigation.

Metalinguistic discourse: (32, 25.7%) All discussion between the students themselves or with the teacher concerning the target language was categorized as metalinguistic discourse.

These first three categories can be merged to form a group of discourse topics directly related to the learning task at hand. These classroom categories represent discourse that is a product of using the interactive videodisc to exercise spoken English. They could only occur in this pedagogical context. They are nevertheless valuable in that they take place in the target language and are the product of genuine interaction between the members of the groups. They represent slightly more than half (51.5%) of the average number of discourse topics engaged in by the subjects.

Screen reference: (34.7, 27.8%) Direct reference to the images displayed on the screen was labeled screen reference. This consisted essentially of identifying what was seen on the screen and description.

Commentary: (23.7, 19.1%) Expressing opinions, hypothesizing, explaining, developing an idea, etc., are all language functions which comment a given image or idea. Students go beyond relatively objective language functions to implicate themselves in their own discourse, stating their own ideas about what they see of the house and what they can assume about its inhabitants.

Personal Reference: (2, 1.6%) In this category the subjects go beyond the immediate task and refer to personal experiences.

The second subgroup of discourse topics reflects the subjects' spontaneous discussion generated by the exploratory activity that the interactive videodisc made possible. Here they react and relate to what is viewed on the screen, rather than deal with the pure mechanics of the exercise, operational, linguistic, or otherwise. This subgroup accounted for 48.5% of the total discourse topics.

Language Functions

A total of 56 different speech acts were found to be present in the interactions studied. Table 3 inventories these language functions and indicates the average number of occurences of each one for the seven groups during the 45-minute period studied. It can be noted that the most frequent functions are agreeing, acquiescing, giving help, comprehension, confirmation, asking for confirmation, asking for expansion, describing objects, describing places, explaining, identifying, hypothesizing, giving opinions, giving instructions, locating, repeating, and suggesting. Each of these occured on the average 20 or more times during the 45-minute interaction. The average total number of distinct language functions reached 845.9, indicating that the learners and their instructor engaged frequently in a wide variety of language functions. See Table 3 for further details.

CONCLUSIONS

This study of human interaction initiated by a repurposed interactive videodisc exploratory activity establishes that rich interaction can take place between learners of a foreign language using the interactive videodisc as a learning tool. The subjets of this experiment did indeed interact and negotiate together, and thus produce varied and voluminous discourse for an extended period of time in the target language. These findings should be considered in the planning stages of future language learning discs so as to incorporate an element of oral production in the activities proposed to the learner.

PRESENTER'S BIODATA

Linda Northrup - EFL teacher in adult foreign language education at the Universite Stendhal Grenoble 3, courseware designer, doctoral candidate in Linguistics and Foreign Language Education.

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THE LANGUAGE LEARNING AND MULTIMEDIA APPLICATIONS (LLAMA) CONSORTIUM

SUE OTTO, JAMES P. PUSACK, JOANNE CANNON, ROBERT DAVIS, ROBERT HART,
RANDALL JONES, JERRY LARSON, AND DONNA MYDLARSKI

ABSTRACT

Presenters will describe the work of the LLAMA (Language Applications and Multimedia) Consortium, which is developing foreign language multimedia applications in Windows under a major grant from IBM. Demonstrations include listening comprehension tools and tasks from the University of Iowa, German and French simulations under development by University of Illinois, digital audio authoring tools and a digital video preview from Smith College, German and Spanish listening situations from Brigham Young, and a French-Canadian culture package from the University of Calgary. The common delivery platform for all the projects is the IBM PS/2 Model 57 (or higher), the M-Motion video board, and a Pioneer videodisc player.

PRESENTERS' BIODATA

Joanne Cannon is the Multimedia Programmer/Analyst for the Center for Foreign Languages and Cultures at Smith College.

Robert Davis is the Director of the Center for Foreign Languages and Cultures and Adjunct Lecturer in German at Smith College.

Robert Hart, Assistant Professor of Humanities, University of Illinois at Urbana-Champaign, is Associate Director of the Language Learning Laboratory and regularly teaches a course on computer-based foreign language teaching.

Randall Jones, Professor of German and Dean of the College of Humanities, Brigham Young University.

Jerry W. Larson, Director, BYU Humanities Research Center and Professor of Spanish. He has been actively involved in IAV and CALI software development, both as an author and consultant.

Donna Mydlarski, Professor and Director of the French Centre, University of Calgary, is the co-author of *Vi-Conte* and other programs for the study of French and French-Canadian language and culture.

Sue K. Otto, Director, Language Media Center, University of Iowa, is a former president of IALL, a director of the LLAMA Consortium and director of PICS.

James P. Pusack, Associate Professor of German, the University of Iowa, is director of the Center for International and Comparative Studies, a director of the LLAMA Consortium and a director of PICS.

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AI IN CALL:
DISPELLING THE MYTHS, CONFRONTING THE CHALLENGES

CHAIR: DANA PARAMSKAS; DISCUSSION PANELISTS: FRANK L. BORCHARDT, WILLIAM DESMEDT, DONALD LORITZ, CLIVE MATTHEWS, GEORGE MULFORD, AND RUTH SANDERS

The AI Special Interest Group has often observed that the field of Intelligent Computer-Assisted Language Instruction (ICALI) has been and continues to be opaque if not impenetrable to our fellow CALLers. This panel (which might well be subtitled "AI for the UnInitiated") will try to rectify this situation, by exploding the myths which have grown up around the field, so as to reveal the real challenges that ICALI offers both to its practitioners and to the broader area of CALL.

MYTHS

The Behaviorist Myth

Clive Matthews

If ICALI begins by formalizing linguistic knowledge, doesn't that make it, at heart, just another behaviorist approach to language learning? To be sure, ICALI relies on a rule-based formalization of linguistic competence, but the rules are the means, not the end. The goal is to provide learners with a platform for natural, unconstrained exploration of the target language. To this end -- and in marked contrast with the overt manipulation mandated by behaviorist-influenced language pedagogy -- the less obtrusive ICALI itself is, the better it succeeds: the operative term is "support," not "conditioning." In the final analysis, ICALI can't be based on behaviorism, since ICALI's whole focus is on learning as a process which involves the acquisition of knowledge, and knowledge is a non-behaviourist concept.

The Terminator Myth

Bill DeSmedt

Anyone at all familiar with the current state of CALL has long since discounted the belief that Computer-Assisted Language Instruction will or can eliminate the need for language teachers anytime soon. But what about *Intelligent* Computer-Assisted Language Instruction -- more particularly, that component of ICALI concerned with Intelligent Tutoring Systems (ITSs)? What is the likelihood that ITS technology, which is already simulating human performance in other instructional domains, can succeed in the language classroom as well? In seeking to dispel this new variant of the "teacherless language instruction" myth, we'll explore the pedagogical paradigm underlying most modern Intelligent Tutoring Systems, and investigate its applicability to language learning. And we'll try to come up with a vision of a more benign ICALI technology -- one that promises to support language teachers, rather than threatening to replace them.

The Vaporware Myth

Don Loritz

Are we still years away from usable ICALI applications? And if they ever do arrive, will we still wait decades more before they're affordable and available in the average foreign language classroom or learning laboratory? The myth that ICALI is nothing but "vaporware" -- software which is often promised but never delivered -- has long been encouraged by the inaccessibility of those systems that *did* exist. Just about everyone on our panel has developed working ICALI systems, but, until recently, most teachers couldn't see them. Computers have not been powerful enough and cheap enough to give teachers a look. Now they are.

Artificial intelligence has entered the classroom through the back door. Vaporware condenses. Apres nous, le deluge.

Myth: Artificial Intelligence is Different From What We're Doing Now

George Mulford

Artificial Intelligence development is in most respects the same as any project development: the same qualities make for success and the same caveats apply. There is however at every level a characteristic Artificial Intelligence flavor imparted by the conviction that the computational process should be designed to reflect some essential feature of the mental process it is imitating.

Object-oriented and rule-based programming are successful products of this AI bias. When we use them, we are "using AI techniques," and that's a good idea. But AI holds out the promise of a truly profound alteration of our development efforts if we attempt to model the mental process of language acquisition itself. The reason we haven't yet seen an unambiguously successful example is not that nobody has thought of it, but that the mental process itself is so hard to describe.

CHALLENGES

The Achievability Challenge, or Is ICALI Doable?

Ruth Sanders

Perhaps the hardest lesson ICALI has to teach us is the inexhaustibility of the task we set ourselves when we first set out to build a system that can approximate human linguistic abilities well enough to support the learning of language itself. The question is never "When will we finish?", but rather "Where should we stop?" Paradoxically, this realization -- humbling as it is -- lies at the heart of all concrete achievement in ICALI, for it forces us to seek acceptable approximations, artful compromises, and what Ken Church of Bell Labs characterizes as "appropriate uses of premature technology." Even the simple string-matching and transformation techniques of Joseph Weizenbaum's original Eliza program are enough to entice its unsuspecting colocutors into hours of engaged pseudo-conversation. Can we do worse now, when our technology has grown so much better?

The Philosophical Challenge, or Is ICALI Barking Up the Wrong Tree?

Frank Borchardt

Behind all the more immediate questions of achievability and cost/benefit ratio, there lurks a nagging suspicion that we may be going about this all wrong. Traditional AI seeks to emulate human linguistic competence via the systematic application of syntactic, semantic, and pragmatic rules.

But what if humans do not rely -- at *any* level, regardless how deep -- on a knowledge of rules in producing and understanding language? After all, do the planets need to solve differential equations in order to remain in orbit? If this were the case, then the whole AI enterprise may be fundamentally flawed, its apparent successes merely milestones on the path down a blind alley. Alternative approaches to the modeling of human language behavior such as neural networks, fuzzy logic, and chaotics have brought about a crisis of confidence in AI, but more importantly they have redefined the horizons of research, and raised the possibility of an ICALI that will not only mimic, but even illuminate our human faculty for using language.

PRESENTERS' BIODATA

Frank L. Borchardt, Ph.D., is professor of German at Duke University and Executive Director of CALICO. He has taken a perverse interest in Artificial Neural Networks (ANNs).

William H. DeSmedt is the designer and developer of *Herr Kommissar*. When not engaged in ICALI-related projects, he serves as consultant to AT&T/Bell Labs on speech and language-processing telecommunications applications.

Donald Loritz, Ed.D., is Associate Professor and Head of the Computational Linguistics Program at Georgetown University, and Director of the Language Research Institute.

Clive Matthews is a lecturer in linguistics at the University of East Anglia, Norwich, England. His interests have been in Intelligent CALL and its relation to Second Language Acquisition theory.

George W. Mulford, University of Delaware, was project manager for the five-year development effort which produced the Foreign Language Adventure Games and is the author of the French Adventure Game.

Dana Paramskas is the current chair of the CALICO Artificial Intelligence Special Interest Group (AI-SIG).

Ruth Sanders Professor of German at Miami University of Ohio, has worked on a number of projects for German-language CAI, including SPION, an AI adventure game, and SYNCHECK, a comprehensive parser of German now being implemented as a writing aid for intermediate and advanced college students.

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WIN CALIS 2.0 AND MULTI-LINGUAL EDITOR

NAGENDRA REVANUR

INTRODUCTION

This paper describes: the advantages of Unicode, the WinCALIS 2.0 authoring system and the capabilities of the Unicode-based text editor, a main part of WinCALIS 2.0 product.

Unicode and Unicode based applications:

Based on current systems, four different classes of language support are currently possible. English-only, variable monolingual, restricted multilingual and unrestricted multilingual. The last one is truly transparent to language and provides support for all languages. A system or application of this type might not necessarily support some particular language; however it will have the capability of doing so. The goal of Unicode is to support this class of language support.

Today, most localized or internationalized systems support a restricted number of languages. This resulted in expanding profusion of character sets, each limited to one or a small number of languages. The choice of a particular character set becomes problematic when a number of languages are to be supported at once; if one wishes to support English, French and Arabic at the same time, then none of the character sets depicted here, except Unicode can represent all three at once. Another important design goal of Unicode is to be able to adequately represent all languages, not just modern written languages but also, as space allows, all archaic languages as well, simultaneously.

Unicode provides a uniform, fixed width character encoding of 16-bits per character, which overcomes some serious shortcomings in variable width encoding techniques. Moreover, in contrast to character encoding techniques which rely on state information in order to determine what character a particular encoding represents, Unicode uniquely associates codes with one and only one character. Consequently, given a particular encoding value, its identity as a Unicode character is never in question.

Unicode, because of its flat, linear 16-bit encoding space for assigning codes to characters, can access up to 65,536 character codes. The Unicode encoding space may be divided into four general linear sections or zones, which follow one another. The first zone contains all general alphabetic, punctuation and symbol characters. The ideographic zone (I-zone) which immediately follows contains the Han ideographic characters. Following this are the O-zone, reserved for future open use, and the R-zone, restricted to private and compatibility characters.

The largest section of the Unicode Standard consists of block-by-block descriptions of characters. Each description provides the encoding value, a representative image of the character when rendered visible, a formal name, and additional annotations which identify alternative names or which indicate cross references to other similar (or dissimilar) Unicode characters.

To summarize, Unicode is designed to serve as the primary mechanism for representing all the world's text. To accomplish this, it defines a standard repertoire of characters, an encoding for these characters, and a plain text format to be used to represent content alone. Unicode can be used both for external interchange and for internal processing, thus obviating the need for multiple string formats. The use of a single file format is very important for supporting both efficient processing and interchange of textual information.

A Unicode-based system of application will use Unicode characters to represent text in perhaps both plain and rich text formats. These representations will serve as the fundamental core of text processing for these systems. Surrounding this core will be input, output (display), processing, and interchange components. WinCALIS 2.0 application, the topic of the next section, is such a system.

CALIS AND WINCALIS 2.0

CALIS, a text-based Computer Assisted Language Instruction System, combines the most innovative concepts of Computer Assisted Learning with the soundest pedagogical principles to equip language teachers with a stimulating educational tool. With CALIS, one can prepare language lessons which supplement classroom learning, i.e. create exercises to be administered, corrected and scored individually for each student.

WinCALIS, a Microsoft Windows based CALIS, takes full advantage of what Windows 3.x does well: mouse input, color graphics, multimedia and comprehensive online help. Thus, making successful language education just a mouse click away.

WinCALIS 2.0, the latest and yet to be released version of WinCALIS, belongs to an unrestricted multilingual class of language support and hence, provides access to a rich set of language and script collection. Moreover, WinCALIS 2.0 being Unicode-based, inherits all the advantages of Unicode.

WinCALIS 2.0 comprises of two main modules: the WinCALIS program itself and the WinCALIS Author. The WinCALIS component is that part of the WinCALIS product which actually runs the lessons. The lessons are based on a scripting language called CALIS programming language. The real power of the WinCALIS authoring program, WinCALIS Author, is the ease and speed with which an author can make scripts without directly using the CALIS language at all. An author provides WinCALIS Author with the text, directions, questions, screen layout, etc. and it automatically writes the script for him or her. Of course, very advanced users may still want to tinker with a script, using one of the multilingual editors in the Author program, to make changes or additions. In the previous version of WinCALIS the scripts consisted of pure ASCII text written in the CALIS language. WinCALIS 2.0 uses the same CALIS language but the scripts are made up of Unicode text.

Multilingual Editor

Most contemporary text editors are based on ASCII file format thus, limiting the number of languages that can be supported at once to a very few. The new 2-byte editor called Multilingual Editor, an integral part of WinCALIS 2.0 product, will overcome this limitation thereby giving authors flexibility, capability and sophistication to create and edit scripts having characters from multiple languages. This kind of flexibility is obtained because of the functional dependence of the editor on the Unicode character set.

The multilingual editor is just like any other editor when it comes the normal editing features, like cut, copy, paste, selection of text etc., but has much more to offer when it comes to dealing with multiple languages. The language menu at the top of the WinCALIS program (both modules) makes dynamic switching of languages very easy. Because of its open-ended design, the editor can handle any number of languages. Authors can therefore have an entire repertoire of language collection at their finger tips when it comes to scripting and are no longer limited to just one or two languages. The best part of the multilingual editor is that it can deal with both, left to right and right to left languages. It automatically takes care of some semantic details of most languages and has elaborate features for entering accented characters, for treatment of non-spacing marks etc. There are many software packages capable of handling these special characters but none of them, excepting WinCALIS 2.0 multilingual editor, is capable of handling these in Unicode, in an authoring environment.

PRESENTER'S BIODATA

Nagendra Revanur is a Research Associate at the Humanities Computing Facility, Duke University, North Carolina. Main interests include Graphical User Interfaces, Computer Graphics.

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GPI: A COMPUTERIZED MANAGEMENT SYSTEM FOR LANGUAGE LEARNING

FRANÇOIS RIGUET

ABSTRACT

The presentation will report on a research project where computers were used to customize an ESL course for beginners. We will explain how the findings of the study helped us define what features a computerized management system should have in order to be an effective tool for language learning. We will present such a system (GPI) and assess its impact on language learning environments using examples to describe its main features.

First, GPI is an easy to use authoring system turning existing word processed exercises into computerized language learning material. Secondly, GPI is a diagnostic device. Computerized activities are used not only as drill and practice, but also to ellicit performance on selected grammar points. Students' errors are then analyzed and GPI gives a diagnosis of the areas of difficulty. Thirdly, GPI is an interactive data bank in the sense that it links learning activity references stored in the bank to the learners' errors. Finally, GPI is a prescription system. It leads students through personalized learning paths in response to an analysis of their difficulties, needs and learning patterns. Each learning path consists of learning activities (old and new technologies) selected from the data bank. These activities are presented to the student as a self study course segment.

We will show how the burden of monitoring personalized learning paths does not fall on the teacher's shoulders and how the teacher may intervene if she or he so desires. Finally we will examine how GPI creates a learning environment that takes into account the respective roles of technological and human interventions.

PRESENTER'S BIODATA

François Riguet, CALL software developer and researcher, Head of the Modern Language Department, Montmorency College - Montreal. Masters in Linguistics (University of Paris VII). Doctoral studies in Linguistics (University of Montreal). Diploma in computer Assisted Learning (Concordia University-Montreal).

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INTEGRATING TECHNOLOGY INTO LANGUAGE CURRICULA: HOW THE PROCESS WORKS

GAIL ROBINSON-STUART AND ROBERT HOFFMAN

ABSTRACT

Developers of computer assisted language learning systems frequently overlook one of the most crucial steps in the development process: the front end analysis. This seminar will describe two techniques used at San Diego State University's Language Acquisition Resource Center (LARC) to initiate and guide the development of new projects: the summer institute and the faculty seminar. The summer institute is a hands-on workshop for prospective CALL developers. Participants consist of faculty member/technical assistant pairs, so both content/pedagogy specialist and programmer collaborate from the ground up, and can support each other on return to the home site. They use textbooks and other materials to tailor their instruction to curriculum currently being used at their sites. Ongoing workshop evaluation and LARCNet, an EMAIL network of CALL developers, allows participants to continue in communication. The weekly faculty seminar brings together language instructors from various departments, pedagogical researchers, CALL developers, and educational technologists for presentations, hands-on experience, and discussions of existing and prototypical CALL systems. CALL features are examined in the light of pedagogic principles, and prioritized for specific learners and objectives. New projects are proposed, designed, and evaluated through these collaborative seminars. Participants all have a stake in the finished products.

PRESENTERS' BIODATA

Dr. Gail Robinson-Stuart (Ph.D. Stanford) is Director of the Language Acquisition Resource Center (LARC), San Diego State University, and joint professor of Spanish and Linguistics.

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PRECISE CRITERIA FOR INTEGRATING EDUCATIONAL TECHNOLOGY AND EXISTING, TRADITIONAL COURSE CONTENT

RICHARD ROSENBLATT

ABSTRACT

This paper describes a methodology for evaluating the applicability of computer-based educational technologies to existing, traditional course materials in any subject matter. Based on a simple but powerful conceptual model that characterizes the teaching/learning process as interactions between a generalized instructional agent and a student, the methodology provides:

- detailed descriptions of agent-generated stimuli ("cues") and of student responses in the existing course(s),
- assessments of the complexity of existing cue combinations and of the effort required to replicate them with available educational technologies,
- assessments of the complexity, mode, and predictability of student responses in the existing course, and of the capacity of educational technologies to emulate the sophisticated response analysis that is generally found in traditional learning environments,
- recommendations for using educational technology based on the assessment of cue complexities and response analysis requirements called for in the existing course, and
- a rational basis for a systematic, focused introduction of appropriate and cost-effective educational technology to the traditional learning environment.

The presenter and his colleagues developed the methodology for the Defense Language Institute English Language Center (DLIELC). We applied it to two courses currently used to teach English language usage to international military students and to three courses that upgrade the English skills of international military English language instructors and course administrators.

This paper will also discuss the application of the methodology at DLIELC, the construction of the on-line data base, the assessment and recommendation algorithms, and our findings and recommendations to DLIELC on the applicability of educational technology to their English language curriculum.

PRESENTER'S BIODATA

Richard D. Rosenblatt, Principal of Diversified Training Services in Fort Washington, Maryland, directed the study on which his paper is based while a Senior Analyst at D.P. Associates, Inc. of Arlington, Virginia. Mr. Rosenblatt, who studied for a Doctorate in Experimental and Organizational Psychology at the George Washington University, has more than twenty years experience in educational research, development, and evaluation. He has substantial experience with a variety of instructional media and methods, including interactive videodisc, computer-based, self-paced, on-the-job, and classroom instruction.

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THE MEDIUM OF MEDIUMS

JAMES E. ROYALTY

To illustrate the rich complexity of language and the variances between the prescribed correct uses of language and the actual meaning of language, it is helpful to begin with a grammatical error. The title,"Medium of Mediums" is incorrect and thus should be incomprehensible or at least difficult to understand; yet the term quickly imparts a true understandable meaning. In order to be grammatically correct, the title of this workshop should be: "Compact Disc Interactive (CD-I) is the Medium of Media", however this inadvertently suggests something different from what is intended. The word, *Media* in American English, has evolved into a term meaning the mass media of television, radio and in some cases the newspaper and magazine industry. From our seemingly endless hours in "grammar school" lessons, we have learned that the use of proper grammar assures proper meaning in language. Yet, in the real world of languages, the meaning is much more complex than the simple grammatical rules that have been applied to guide our attempts to communicate with others through the spoken language.

If examined literally, the "Medium of the Mediums" has as much meaning as Saddam Hussein's statement, "The Mother of All Wars", or the redundant "multi-media" (media and "multi" are plural), which is used to describe a new industry that is successfully advancing the teaching of language.

The inconsistencies of language make it a difficult subject to teach, especially if after learning one language, the learner is required to learn another language later in life. This is the challenge all of us face in the foreign language field.

Of the emerging technologies that can be used in education, Compact Disc Interactive is a medium capable of anchoring the relationship with other media; and it is the technology that will help untie the Gordian Knot of foreign language learning providing the first pedagogical advancement since the introduction of audio tape in the late 1940's. At this time only one extremely expensive language learning CD-I set of discs has been developed for Japanese businessmen who wish to learn business English. Normally the cost of a program will range in prices from $39.00 to $79.00.

In the field of education, multi-media technologies closely associated with, or competing against Compact Disc Interactive (CD-I) are Laserdisc, the popular Compact Disc-Read Only Memory (CD-ROM) with it's many variations, Digital Video Interactive (DVI) and Radio Shack's new Visual Information System (VIS). Only CD-I and VIS can be operated fully without a computer.

VIDEO QUALITY - PROGRAMMING CONTROL

(Program to be demonstrated: Renaissance Art, Kodak Photo CD)

The laserdisc was the first optical technology available for education. It continues to provide exceptional video quality, that is superior to Compact Disc Interactive, but as a technology, remains isolated and expensive. The individual laser players, after years on the market, currently cost more than the newly released CD-I. Prices for consumer and industrial CD-I players have begun to drop drastically. If computer interaction is added to the laser player, the costs are considerably more. As a digital technology (versus the analog of laser), CD-I provides greater control over the programming making it more versatile. For language instruction, the laserdisc normally provides only two soundtracks, one for the target language and one for the translation. The multiple tracks available on CD-I present the teacher with a wide variety of new methods to enhance learning. In addition to the target language and the translation, an audio explanation can be provided relating to the visual images on the screen. If the desire is to use one visual image to teach the various levels of language (elementary to advanced), the multiple tracks mean each of the levels can provide a translation and explanation along with the original language.

PROGRAMMING SPEED

(Program to be demonstrated: Mystic Midway, Battleship)

CD-ROM has developed a satisfactory niche in business and education, but has failed to deliver on its promise to a wary marketplace. One of the difficulties in education, and especially foreign language learning, is the slow presentation and response rate of CD-ROM. Good language instruction requires long hours of basic drills in which the student receives an immediate response for better comprehension. If the response time is instantaneous to the learner's commands a rhythm can be established that will eventually produce automatic responses to verb conjugation drills, gender and article changes along with vocabulary when words with similar sounds are incorporated into the exercises. Using the rhythms of the language, learning becomes easier, the retention rate higher, and the levels of comprehension more deeply imbedded, and thus more natural. The "game level" speed of CD-I, which can vary the responses with the stimulus, represents a new tool now available for language instruction that will require experienced teachers to develop the proper programming.

With program tools like those available in Battleship, vocabulary words on one section of the screen (in this case the bombs) can instantaneously fill in the blanks of a sentence on another portion of the screen while giving the learner corrective responses in the video window. If the sentence refers to action, the window can demonstrate that action using film or video.

It is valuable to remember that all of this will be available on a home player at a cost of about $200.00 - $300.00, which is compatible with Kodak's new Photo CD's, Compact Disc Audio, and will interact with broadcast television programs. The Discovery Channel, as well as other networks, are working with CD-I to enhance their broadcasts. In addition Rauland Corporation is using CD-I in their distributive networks for schools. (The Rauland Commander has the potential of competing effectively with DVI).

COMPLEX PROGRAMMING

(Program to be demonstrated: Noah)

The closest competitor to CD-I in education is Digital Video Interactive (DVI), which holds a great deal of promise. The teacher is capable of becoming a director and producer of an educational experience, all linked to learner interaction through the computer. DVI systems can easily and inexpensively draw from other forms of instructional media, such as videodisc, or CD-ROM, or video tape and organize the material into an excellent interactive program. DVI allows the individual teacher to control the content and the interaction.

Understanding geographical directions in Russian is difficult. Using the thumbstick (joy stick), the program can begin by having the words "left", "right", "up", DVI offers the teacher in-house versatility, but lacks an established standard. As the "medium of mediums", CD-I is the world's first international video standard, capable of playing on any video screen, and on any player in the world. DVI remains essentially an American system that has not fully established the compression/decompression algorithms to create a consistent standard within the DVI family. (You could not bring a video tape from France and use it in the system without first converting to the American standard). The image quality of DVI continues to improve, but has failed to achieve the resolution levels necessary to gain the acceptance of the Motion Picture industry. In the coming year, full length films should be available on CD-I discs for home use. For the language teacher, this will mean a single CD-I language disc may contain text, full motion, pattern drills, interactive audio, along with other items. For those schools using the Rauland Ranger Media Management system, the teacher can replicate some of the advantages of DVI.

The Bible series produced by Interlight Productions demonstrates the various methods of learning that can be packed into one disc. The series includes narration with visuals and branching along with a dictionary and assorted games. Any one of the programming tools used in the design of this disc could be incorporated into foreign language instruction.

CONTROLLING THE CONTENTS OF TELEVISION

(Program to be demonstrated: ABC's Golf Game)

Using this program, the learner or "the game player" in this case, can actually change the direction of the person on the television screen. After receiving preliminary information (three levels of instruction can be provided), the person operating the screen makes their own calculations and cue's the screen for a simulated golf swing. After the CD-I player's one megabyte chip calculates the power and direction of the simulated swing, another audio message is provided commenting on the location of the ball.

This is an extremely complex program integrated into one single disc responding quickly and effectively to the commands of the controller. For language teachers, the control a student can exercise over the screen opens new opportunities for learning.

"down", on the screen that are moved "left', "right", "up", "down" by the learner with the thumbstick as the narrator gives the commands. As the program becomes more sophisticated, the words are replaced by graphics of the streets of Moscow incorporating the thumb stick to direct a car around buildings and other locations identified in Russian. As the student becomes more knowledgeable, the narrator could present a longer list of buildings and parks to navigate as part of the vocabulary build-up exercises, and to improve memory retention.

Most multi-media language programs follow the patterns established in the textbooks before any form of media, including audio tape were available for instruction. These patterns are grounded almost exclusively in a grammatical approach to language learning. With CD-I, the language environment can be simulated, allowing the language to be learned more naturally. And, programs operating at interactive game level speed enable the teacher to create rhythmic drill patterns to enhance the students retention, and interest.

In addition to the consumer player, there are industrial versions of the CD-I Player with computer floppy disc's that will allow the teacher to add material to the screen or retain information about the student. These players now cost less than the laserdisc players.

CD-I offers the foreign language teacher exciting new prospects in teaching. One of the reasons for this workshop is to interest teachers in CD-I, and to ask them to help us in the development of foreign language material for CD-I.

PRESENTER'S BIODATA

James E. Royalty, is the President of Maryland Compact Disc International. A recently formed company that has an agreement with the Peoples Republic of China to produce art, religious and tourist disc's for the English speaking world.

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"MENTAL SOFTWARE" AND INFORMATION TECHNOLOGY RESOURCES

BERND RÜSCHOFF

ABSTRACT

Recent developments in information technology (IT), particularly in the area of multi-media resources and hypermedia, necessitate a complete reorganization of the language learning environment. However, even today far too little is know as to what makes a learner's mind tick and how an IT-enhanced environment may best address a learner's learning and acquisition requirements.

In my presentation I intend to discuss swam of the principles of psycholinguistic and cognitive research that should form the basis of the education design of the learner-resource interface in IT-enhanced language learning. Furthermore, initial results of a project dealing with an analysis of how working with such resources fits with and affects individual learning strategies.

PRESENTER'S BIODATA

Dr. Bernd Rüschoff studied English, Slavonic Languages, Philosophy and Education at the University of Münster (Germany). He continued his studies at the University of Alberta (Canada) and at the University of London, where he obtained a Ph.D. in Russian Linguistics. He is currently head of language section of the Audio-Visual Media Resource Centre at the University of Wuppertal (Germany).

He has gained wide experience in developing technology enhanced learning systems. Over the past decade he has participated in a number of projects dealing with the development and assessment of such systems, particularly multi-media resources for language learning. He has published extensively on this subject. His audio-enhanced VOICECART system and CART range of software has been successfully implemented in a number of institutions.

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VIDEODISC PURE AND SIMPLE

CLAIRE SAINT-LÉON

Once upon a time, the usual method to learn a foreign language was to read some literature from the masters in that language and to translate it in order to understand it. Questions were formulated so that the answers would reproduce the studied text and eventually some attempts at composition would follow the same style. It was largely an intellectual exercise depending mostly on the study of vocabulary and grammatical structures in the way they relate to or differ from the mother tongue. The ability to understand the foreign language and to speak it was expected to follow as a matter of course. But of course it seldom did since reading and writing skills are quite different from those of listening and speaking. Experience actually shows that people who learn first to read and write a foreign language often have more trouble unsderstanding it when spoken or speaking it. As Edward T. Hall points out: "... once people have learned to learn in a given way, it is extremely hard for them to learn in any other way." [1] Therefore, in order to be able to speak it, it is important to meet a language first orally and only later in writing as it is the case with one's own native language. Until not so long ago, the only solutions were to go to a country where the foreign language is spoken, converse with people speaking it, or watch movies or video in that language.

Since, however, spoken language is so elusive (foreign people always speak too fast!) it appeared necessary to write down the dialogues, thereby getting back to a reading situation. When reading a text, learners cannot easily pay close attention to either the pictures or the sounds. This is most regrettable since they miss the elements of nonverbal communication which play such an important part in human interaction. They miss precisely what they are trying to acquire.[2]

In the seventies, Professor Laurence Wiley, at Harvard, pointed out the importance of paying close attention to nonverbal elements when studying a foreign language. He was using an old Bell and Howell movie projector to show individually each of the twenty-five frames per second of a recorded interaction and thus point out the importance of nonverbal cues in communication. But those frames were mute and allowed exclusively the study of silent nonverbal elements.

The advent of the CAV videodisc finally makes it possible to study together as a whole the verbal and nonverbal elements of a videotext in very much the same way as a written text: it is possible to stop and go, to jump forward, to go back and replay a segment as many times as desired, and each time, it remains absolutely identical.

It is generally agreed that the videodisc is the choice support to present video for language study because of the flexibility and precision it affords. For a variety of reasons, it is not always used to full avail, however.

One of the main reasons is probably that, in an academic environment, many instructors remain attached exclusively to the tradition of "teaching" foreign languages in relationship to the mother tongue of the learners instead of "practicing" them on their own. Language tests are largely written. Consequently learners cling desperately to the words. In that perspective, some instructors would only accept video made to order to illustrate these aspects of language and preferably following closely the textbook they use. They object to so-called "authentic" video on the ground that it is "too difficult" or just plain "incorrect." It is true that transcribed live dialogues do not mean much on paper precisely because they lack the nonverbal elements; scripts can be a help to the instructor to locate a segment but giving them to the learner defeats the purpose of using video. While some videotexts are certainly more appropriate than others, most videotexts are accessible to beginners to some extent. It is not the video which must be adjusted to the level of students but the questions. Admittedly it is a slow process and it is often objected that there is not enough time to "cover the program." When the ultimate goal is oral proficiendy, however, spending time on nonverbal elements, is usually quite rewarding and will soon lead to an understanding of some verbal elements and eventually to the actual use of the language. Time apparently "lost" is actually regained tenfold while learners who are presented with video only after some traditional study are likely to have more difficulty in understanding video.[3]

Another problem is that too many instructors are afraid of machines in general and computers in particular. It is true that controlling at the same time a group of learners, the subject matter, and a remote control or a complex station consisting of a videodisc player and a computer can be quite a stressful enterprise for some people.

It is true also that many schools cannot easily afford to dedicate a computer exclusively to controlling a videodisc player.

To these problems, a barcode system offers a simple and economical solution. After segments have been determined by their beginning and ending frame numbers, a barcode for each of them is generated by a computer.[4] Henceforth, the computer is no longer needed, only the videodisc player, the monitor and barcode reader. When an instructor is definitely allergic to computers, barcodes can be generated by someone else; some students are very expert at doing it. Eventually videos will be available for sale with a set of barcodes, the instructor being free to formulate appropriate questions for each group of learners.[5]

Barcodes offer great latitude to explore a videotext either in or outside of class. They provide an ideal socratic approach to understanding video on a videodisc. It is more a discovery than an understanding. It differs from a programmed lesson on a computer in that the answers are not preordained. Nor are all the questions for that matter. This writer has even had good luck in having some of her students prepare the presentation of a video for their schoolmates. It usually makes for animated discussions and students often notice details an instructor does not necessarily notice.

For the sake of an example, we would like to refer to a video entitled: "La Benne à ordures", in *Sketches Comiques*,[6] It is a good choice for beginners because it contains a great deal of nonverbal communication and a simple dialogue.

The first step will be a discovery, segment after segment, of the nonverbal elements: "--What is on the screen? --A door. --Who is on the screen? --A man. --Does he go in or out? --Out. --What does the man do? --He feels his pockets. --Why do you think? --Maybe he forgot something. etc..." Learners might be able to catch the name of the characters. With non-beginners, simple questions can be asked in the target language, here French, students formulating their answer on the pattern of the question: "sortir DE", "entrer DANS". In that case, the instructor can choose to turn off the volume and concentrate on the visual part. Then the entire sketch can be played without stops.

The next step, possibly another day, will consist of choosing pieces of dialogue which can be understood easily, given the degree of proficiency of the students: "J'ai oublié mes clefs." "C'est malin!" Difficult pronoun order can be illustrated: "Tu peux me les lancer?" "Je les ai!" Oftentimes students will repeat something they just heard and want to identify. With barcodes it is easy to go back and forth to retrieve any segment at will.

That is why we recommend barcoding as an efficient system both economical and easy to use which offers great latitude to explore a videotext inside or outside of class.

Since, in an academic context, only what is tested seems important, it is advisable to have video tests. The questions should be very simple and on video which has not yet been shown. The idea is not to memorize answers but rather to develop observation skills which make it easier to understand any video. We must keep in mind that television from all over the world is now available by satellite and will be more and more easily available; television is now part of everyday life and, if people are not afraid to "tackle" foreign video, they will soon be able to relate to different cultures and appreciate the differences instead of translating everything in their own perpective. This should make for better understanding among peoples of the world.

NOTES

1. Edward T. Hall, *The Silent Language*, Anchor Book, Doubleday, Garden City, N.Y.,1974, p.48
2. See "Culture is Communication" in *The Silent Language*, op. cit., pages 97-104
3. see above (1)
4. Software for creating barcodes: BCS-kit for IBM/compatibles, $195, Bar'n'coder for Macintosh, $50. Barcode reader/scanner, $95 to $140. Available from ZTech, P.O. box 1055, Louisville, KY 40201-1055. Ph: (800) 247-1603, (502) 584-8505, Fax (502) 584-9090.
5. For example Alice Slaton's *Flash Télévisé*, available from LAVIE, 5930 Plainview, Ventura, CA 93003, phone (805) 650-9960
6. Available from PICS, phone (800) 373-PICS.

PRESENTER'S BIODATA

Claire Brandicourt Saint-Léon, Licenciée-ès-lettres (Sorbonne), Ph.D. (U.C.L.A.), Professor of French at Tennessee Technological University, and a member of CALICO since its inception, has been working with videodiscs since 1984.

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BUSINESS JAPANESE, A HYPERCARD SIMULATION

YOSHIKO SAITO AND THOMAS F. ABBOTT

INTRODUCTION

This paper describes Business Japanese (BJ), a HyperCard based tutorial designed to be used as integrated courseware for use in an intermediate level "Business Japanese" course offered at The University of Texas at Austin. Language courses for specific purposes have become popular in many college level Japanese programs, students generally have pragmatic goals, that is, they want to be able to go to Japan and function effectively.

A major objective of the BJ project was to develop courseware that would integrate language learning theory, practice, and technology. BJ stresses a realistic / functional approach to teaching authentic Japanese by presenting visual images and all dialog materials in four forms; spoken Japanese with native speaker voices, authentic written Japanese, Romanized Japanese, and English. A feature of BJ is the use of specially developed fonts to present authentic Japanese text in the American Macintosh operating system. A business trip simulation is used as the organizing metaphor to teach both Japanese language and cultural concepts.

The authors had four guiding objectives in the development of BJ;

1. To provide a realistic visual context to illustrate the day to day Japanese working environment and focus on functional Japanese.
2. To present authentic Japanese text with kanji.
3. To present the content in English & Romaji so that people who were not already students of Japanese could also use the BJ materials.
4. To create a portable package for the widest possible application within the installed base of Macintosh users.

TARGET AUDIENCES

This program is designed to be used primarily by intermediate level Japanese students, but it can also be a stand alone resource for self study by international business students, and professional travelers.

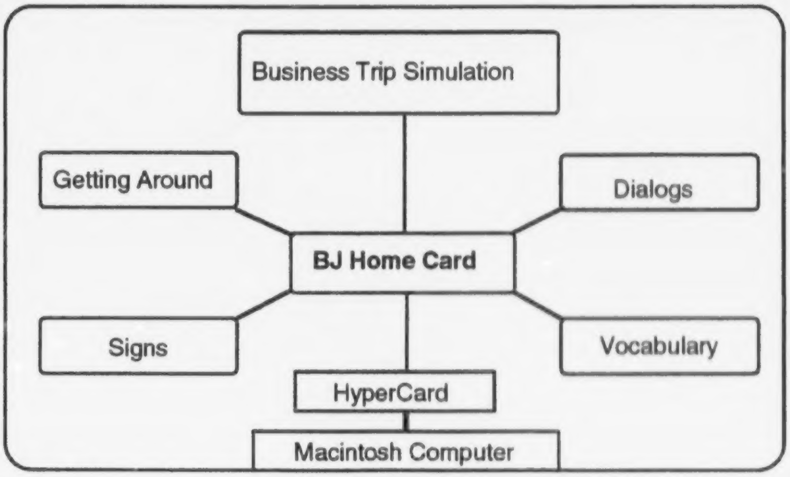
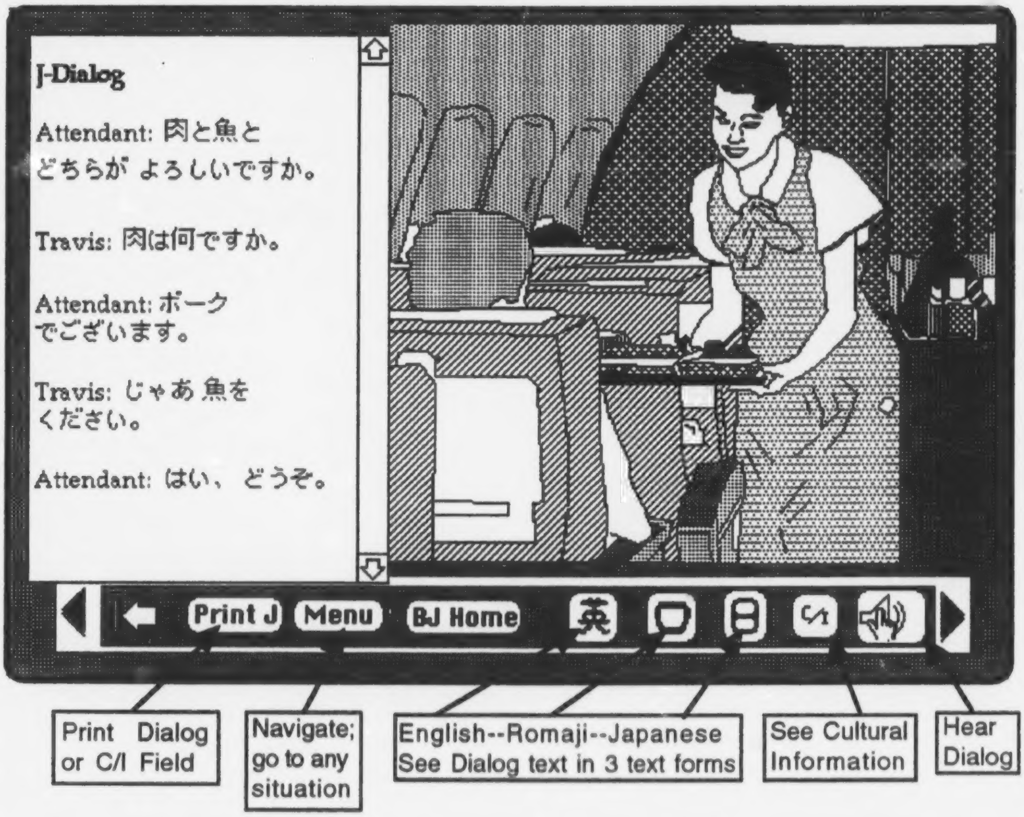


Chart 1



J-Dialog

Attendant: 肉と魚と どちらが よろしいですか。

Travis: 肉は何ですか。

Attendant: ポーク でございます。

Travis: じゃあ 魚を ください。

Attendant: はい、どうぞ。

Print J
Menu
BJ Home
英
Print Dialog or C/I Field
Navigate; go to any situation
English--Romaji--Japanese See Dialog text in 3 text forms
See Cultural Information
Hear Dialog

Illustration 1: "W.B." Travis trying out his Japanese with a flight attendant.

PROGRAM DESCRIPTION

BJ Structure. The structure of the BJ program is shown in chart 1. BJ Home is the hub through which all of the stacks are accessed. While the business trip simulation is the primary focus of BJ, other stacks add supporting layers of information and material to which the user may branch for deeper study. Each stack has its' own internal navigation menu.

BJ uses a simulated business trip to Japan as a metaphor to teach enough functional Japanese to carry off the trip smoothly. "W.B." (Wild Bill) Travis is a young software specialist working for a Dallas based high-tech company making his first business trip to Japan. The simulation follows him from the airplane through immigration and customs into Japan where he meets people, rides express trains, checks in and out of hotels, has meetings, rides the bullet train and more. There are 80 screens in just the simulation with integrated dialogs, visual images and cultural information. In addition to the trip simulation, other BJ stacks present grammar notes on the dialogs, vocabulary, reding signs and cultural information.

Business Trip Simulation

Illustration 1 is a typical trip simulation screen. Students may read the dialog in any of the three forms and by clicking on the speaker icon they can hear the dialog in authentic Japanese. Cultural information can be accessed by clicking on the [C/I] button which reveals a full screen text field with much greater depth of background information. Users may simply click on the forward or backward arrows and do the simulation in sequence or they can use the "menu" button to "navigate" to any situation in the ten day sequence of events. Also they can print the dialog fields or the cultural information.

Dialog Study

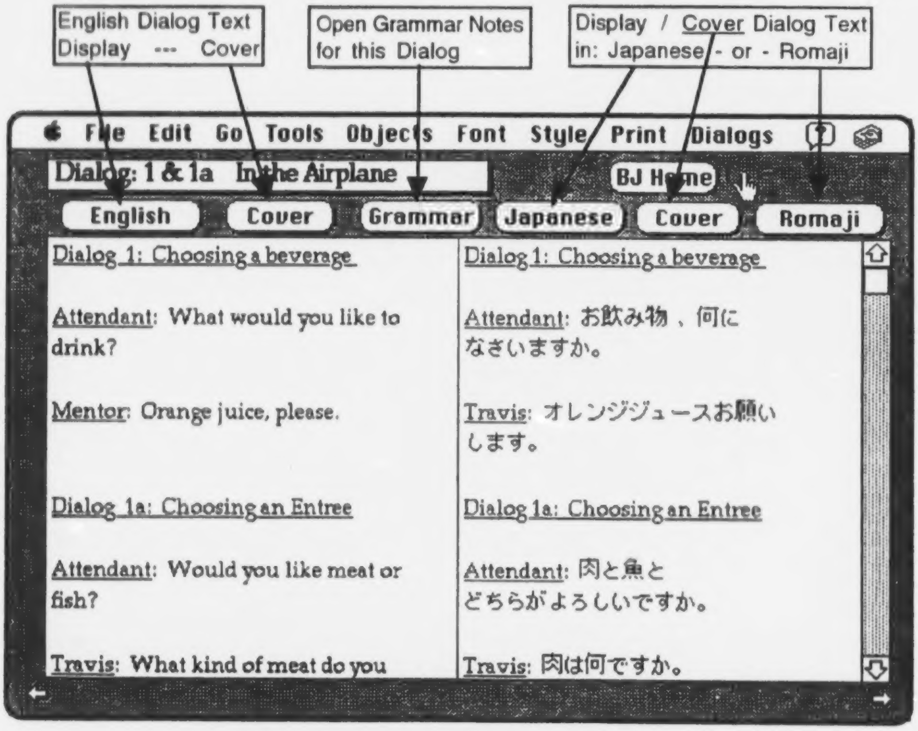
After going through the trip simulation, those who want to master the dialogs and study grammar in more detail, can bypass the trip and go straight to the dialog stack where there are 41 screens similar to Illustration 2. Students can view a dialog in English on the left and either the Japanese or Romaji dialogs on the right. All three text fields are linked to each other and scroll together. Learners may cover either side and self test their progress. By clicking on the [Grammar] button, they can display the grammar notes fields as shown in illustration 3. An additional feature is that students can print out any of the dialogs and the grammar notes for their convenience.

Grammatical Detail

Clicking the [Grammar] button in the dialog screen will cause the grammar notes screen to pop-up as shown in illustration 3. Students can find the point they want to study in the upper window, click on it, and the information they seek appears in the lower screen. This great feature adds depth to the presentation of dialogs and effectively turns the BJ stacks into an interactive illustrated (HyperCard) intermediate level Japanese text.

Vocabulary Study

The vocabulary resource stack is especially helpful because the dialogs are not always literal translations, and sometimes the meaning of a word is not obvious. The vocabulary screen is very similar to the dialogs screen in appearance. There are three synchronized scrolling columns to present vocabulary items in all three text formats. Also, the vocabulary lists have been expanded beyond the dialogs with related additional vocabulary. This resource gives the learner a chance for further useful vocabulary acquisition.


English Dialog Text Display --- Cover
Open Grammar Notes for this Dialog
Display / Cover Dialog Text in: Japanese - or - Romaji
File Edit Go Tools Objects Font Style Print Dialogs
Dialog: 1 & 1a In the Airplane
BJ Home
English
Cover
Grammar
Japanese
Cover
Romaji

Dialog 1: Choosing a beverage

Attendant: What would you like to drink?

Mentor: Orange juice, please.

Dialog 1a: Choosing an Entree

Attendant: Would you like meat or fish?

Travis: What kind of meat do you

Dialog 1: Choosing a beverage

Attendant: お飲み物 、何になさいますか。

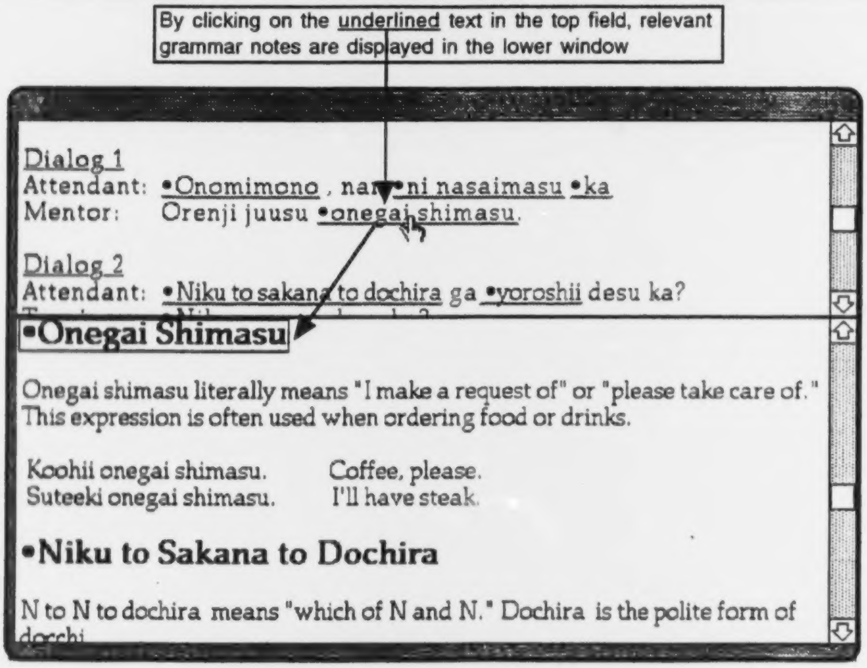
Travis: オレンジジュースお願いします。

Dialog 1a: Choosing an Entree

Attendant: 肉と魚とどちらがよろしいですか。

Travis: 肉は何ですか。

Illustration 2: a typical dialog stack screen.



By clicking on the underlined text in the top field, relevant grammar notes are displayed in the lower window

Dialog 1
Attendant: •Onomimono , na •ni nasaimasu •ka
Mentor: Orenji juusu •onegai shimasu.

Dialog 2
Attendant: •Niku to sakana to dochira ga •yoroshii desu ka?

•Onegai Shimasu

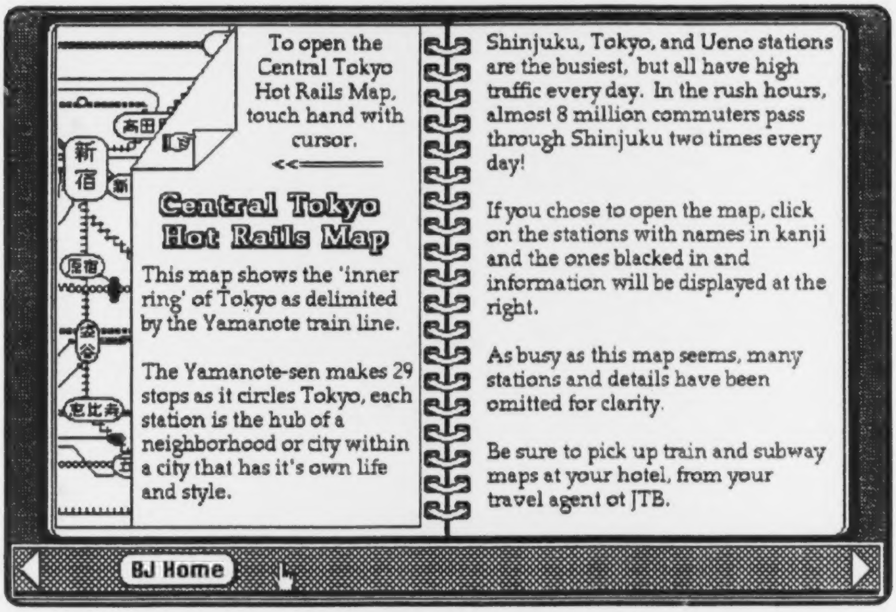
Onegai shimasu literally means "I make a request of" or "please take care of." This expression is often used when ordering food or drinks.

Koohii onegai shimasu.	Coffee, please.
Suteeki onegai shimasu.	I'll have steak.

•Niku to Sakana to Dochira

N to N to dochira means "which of N and N." Dochira is the polite form of docchi

Illustration 3: a grammar notes screen.



To open the Central Tokyo Hot Rails Map, touch hand with cursor.
<<═══

Central Tokyo Hot Rails Map

This map shows the 'inner ring' of Tokyo as delimited by the Yamanote train line.

The Yamanote-sen makes 29 stops as it circles Tokyo, each station is the hub of a neighborhood or city within a city that has it's own life and style.

Shinjuku, Tokyo, and Ueno stations are the busiest, but all have high traffic every day. In the rush hours, almost 8 million commuters pass through Shinjuku two times every day!

If you chose to open the map, click on the stations with names in kanji and the ones blacked in and information will be displayed at the right.

As busy as this map seems, many stations and details have been omitted for clarity.

Be sure to pick up train and subway maps at your hotel, from your travel agent ot JTB.

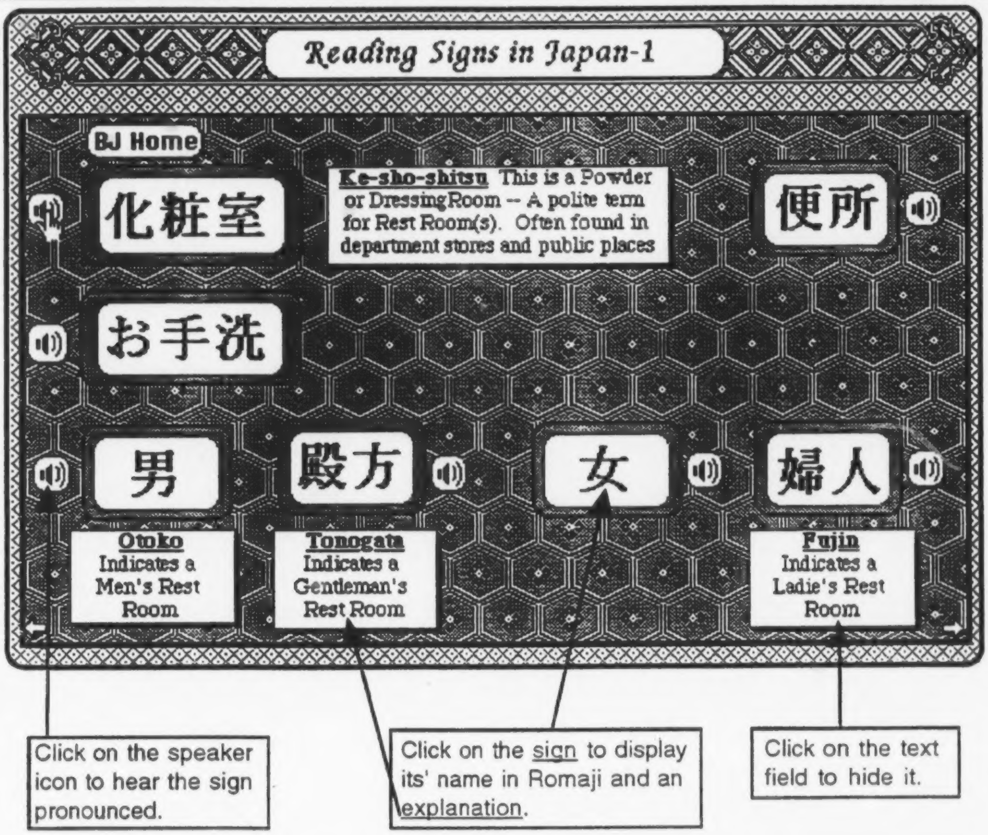
Illustration 4: a cultural information screen from the "Getting Around in Japan".

Cultural Background

Cultural information is embedded throughout the trip simulation, but it is explicitly presented in two places. From within the trip stack where it can be accessed directly by clicking on the [C/I] button in almost every screen. (In some cases there are no C/I notes or maybe no dialogs, in these situations, clicking on the buttons will cause a notice to that effect to be displayed.) The other source of cultural information is the stack entitled "Getting Around in Japan" which can be accessed via the BJ Home card. Illustration 4 is a screen from the Getting Around stack. It introduces the "Hot Rails Map" which is the next screen in that stack. Students can see a map of central Tokyo's transit system where by clicking on a station they can receive information about the surrounding area and train or subway connections available there.

Reading Public Signs

In Japan as in every nation, there are signs that communicate important information. Virtually all signs are written in Japanese, mostly kanji. Any traveler would be well advised to learn a few of these before going to Japan. Illustration 5 shows a typical screen from the "Signs" stack. This is basically a recognition task where student may look at the sign to check their memory then click on the sign to display a text field showing the name of the sign in Romaji and an explanation in English. Also, the student may click on the small speaker icon next to each sign and hear it spoken by a native speaker.



Ke-sho-shitsu This is a Powder or DressingRoom -- A polite term for Rest Room(s). Often found in department stores and public places

Otoko Indicates a Men's Rest Room

Tonogata Indicates a Gentleman's Rest Room

Fujin Indicates a Ladie's Rest Room

Click on the speaker icon to hear the sign pronounced.

Click on the sign to display its' name in Romaji and an explanation.

Click on the text field to hide it.

Illustration 5: A 'Signs' Stack Screen

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CHARACTERISTICS OF THE BJ PROGRAM

Realistic

By using visual images and natural dialogs, BJ communicates the "Look and Feel" of being in Japan. The sequence of events is realistic allowing students to learn Japanese in context. BJ is situation oriented, and with the stack navigation menus, learners can quickly go to the situation they wish to study. Early prototypes and story boards were tested for realism and usefulness with people who had recently returned from a first trip to Japan. The response in all cases was that it fairly represented some of their experiences (students had different experiences than business people), and they would have liked to have had the chance to study something like BJ before their trip. Even those who had stayed for an extended period of time stated that they found useful new information in BJ.

Travel Oriented

The BJ program was primarily limited to travel related experiences with cultural information for two reasons. First every traveler, business, academic, or otherwise will encounter many of these situations, and the cultural information enables one to know what is going on. Secondly, once business travelers get to their Japanese contacts they will probably have good English capability, it is the rest of the trip where some Japanese ability will help to have a successful experience.

Japanese Fonts

Presenting Japanese characters was a major challenge because it was desired to do this without using the KanjiTalk system. To accomplish this objective, it was necessary to develop a special set of fonts to enter and display Japanese text while using the American System. It was determined that the Japanese operating system should not be used because it is not in common use outside of Japan, installation is difficult, and it requires a large block of memory, both in RAM and about 6MB of hard disk space for the duplicate system folder. The Hiroshi fonts, on the other hand, use up only about 20K when installed in the American Mac system file, and can be used in any version of the Mac system.

User Friendly Design

Apple's "Human Interface Guidelines" and "HyperCard Stack Development Guidelines" were consulted and followed to ensure a truly user friendly final product. In designing BJ we had to keep in mind the fact that prospective users of BJ may not be prepared to tinker with their system software or cope with operational idiosyncrasies of the program while trying to learn some Japanese. An installer program is planned to install the BJ fonts, uncompact any compressed stacks, put all of the stacks in the same folder and put a "BJ" button in the user's home card.

Machine Environment

BJ requires a Macintosh Plus or better capable of running HyperCard 2.x. System 6.5 or above is necessary with a minimum of 2MB RAM and about 10MB of available hard disk space.

Portability

Portability was a major design objective, and BJ can be delivered on eight HD or ten DD disks. Sound resources were also kept to a minimum and graphics were constrained to simple B/W images so they could be viewed on earlier Macs and to save memory space.

CONCLUSIONS

BJ's authors have combined their focus on enabling Americans to function and compete in Japan and their expertise to create realistic simulation software. It has been said that a problem with many CALL programs is that programmers don't know much about language and language teachers don't know much about programming (Underwood, 1988). No claim of programming expertise is made by the authors, that goes to Bill Atkinson and Apple for giving us all HyperCard. HyperCard is a magical authoring environment that can be easily learned and that allows authors to combine graphic illustrations, text and sound in creative ways to enhance learning objectives.

An additional observation specifically focused on courses in Business Japanese is that even native speaker Japanese teachers often have little or no experience with Japan's business world. Also, a recent survey of international business managers cited (business) cultural knowledge as the most desired secondary benefit from language study (Saito, 1992).

The solution to these potential pitfalls, of course, lies in the experience of the software author(s) and the integration of that experience with the programmer(s) work. In the best of all worlds, the language expert, the business expert and the programmer would all be the same person. The authors backgrounds bring all of these talents to the creation of BJ, and that is one of the program's great strwngths, pedagogical integrity combined with real world experience.

Future Projects

An increasing number of young Americans are spending a year or more in Japan in various internship and study programs, so a "living in Japan" simulation seems like an appropriate next venture. There is much useful information, such as leasing an apartment or understanding utility bills, that could be presented in a manner similar to BJ.

The collection of graphic images was critical to realizing the authors' vision, but it was also the most time-consuming effort. Every possible source on hand was searched and then, during two trips to Japan, video and still images were collected. Finally, images were sorted, selected, and scanned for use as patterns for drawing original graphics which were then pasted into the waiting HyperCard screens. In future revisions, unification of the characters and artwork will be a major objective.

CDROM and QuickTime will probably soon reach a threshold level of acceptance where we can design CALL packages for this media. This will enable program designers to consider memory intensive designs and include high quality graphic images and even video images. That will be exciting as we become micro movie producers.

REFERENCES

Underwood, John. (1988), "Language Learning and Hypermedia," *ADFL* v19, n.3: 14-17.

Saito, Yoshiko. (1992, March) "Assessing Japanese Language Needs for Business and Professional Use," paper presented at Eleventh Annual EMU Conference on Languages and Communication for World Business and the Professions, Eastern Michigan University, Ypsilanti, MI.

PRESENTERS' BIODATA

Dr. Yoshiko Saito is Assistant Professor of Japanese at The University of Texas at Austin, she earned her MA and Ph.D. from Ohio State University in foreign language education. She is active in Computer Assisted Language Instruction (CALI) and "Business Japanese" research projects.

Thomas Abbott is a management consultant, he heads up Abbott, Saito & Associates. He has almost two decades of experience as a Japan specialist. His academic background includes: BBS, Economics from Ohio State; MBA from SMU; and is a Doctoral Candidate in International Management at UT-Dallas.

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USING THE ELECTRONIC CLASSROOM FOR ESL

SHARON SALUS

This presentation will explain how the first "electronic classroom" at the University of Maryland, the AT&T Teaching Theater, has been used in the teaching of ESL. Features of the hardware and software of the Theater will be described and then how those features have been used to facilitate language instruction.

In 1991 the AT&T Teaching Theater opened its doors at the University of Maryland. Funded by a grant from AT&T, the Teaching Theater contains 20 high-performance workstations for students, and one at the instructor's podium, all connected to the campus Internet network and to an AT&T StarLAN network with a local Novell server.

Student attention can be directed to the front of the room where there are a whiteboard and two 4' by 6' rear-projection screens which project images from the computers, the video equipment, and an electronic overhead projector. Information can be transmitted in other directions as the instructor can capture a screen from any monitor, student or instructor's, and send it to any or all of the other systems in the room, as well as to the projection screens. The computers complement the vast array of audio/video equipment: three video cameras, video tape and laser disc players, audio tape and compact disc players.

Not designed for a specific discipline, the Theater serves to enhance the teaching/learning process in general, providing a format for collaborative work and for multidirectional communication. Classes as wide-ranging as Management Information Systems, Euclidean and Non-Euclidian Geometry, Experimental Psychology, and Introduction to CAD Graphics occupied the Theater during the first semester. The Maryland English Institute (MEI) began to use the Theater in 1992, becoming the first department to use it for language instruction. Classes which have used the Theater included an oral-skills class and a semi-intensive class, whose primary objective is acquiring academic English.

Adapting the Teaching Theater's existing software, most of which was chosen for its generic application, to language activities has been challenging. MS-Dos based programs that support word processing, paired electronic "talking," and a group decision-making tool were used extensively. Invaluable support staff fine-tuned the software to meet the language needs.

Equally challenging has been the choreographing of each class to take full advantage of the audio/visual equipment, and the interaction of the a/v technology with the computer capabilities. Many new techniques were attempted; many old ones were improved upon. Student reaction has been favorable, both on evaluation forms, but more importantly, in class participation. Students who were usually reticent in the regular classroom eagerly contributed to brainstorming ideas, peer correction, and conversing electronically. Formal measurements at the end of the semester were not undertaken, but anecdotal evidence clearly indicates very enthusiastic responses. This enthusiasm should be sustained as we learn more about using the electronic classroom.

PRESENTER'S BIODATA

Sharon Salus, M.A., A.M.L.S. Taught ESL/EFL at the University of Maryland for ten years; taught in Malaysia; Georgetown University. Developed and incorporated computer literacy and word processing component into semi-intensive classes. Now using E-Mail, the electronic AT&T Teaching Theater, to enhance reading/writing instruction.

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A TERM PAPER TOPIC ADVISOR FOR STUDENTS OF GERMAN LITERATURE

RUTH SANDERS AND MARY KATHRYN CASSIDY

ABSTRACT

We will describe and demonstrate a program that works interactively with students to generate term paper topics for German literature. The program advises students who need help in selecting topics for advanced courses, taking into account their interests and how they intersect with the course literature. It works by questioning the student about his or her knowledge and interests, based on the reading list of the course in question. With the student replies as a base, the program uses branching techniques to consult its database of authors, titles, and background information and suggests several topics. The combinatorics involving choices from even one course's reading list insure that many different topics will be possible; the program is randomized to enable provision of different topics to many students. The final product is a short paragraph in German or English describing the suggested topics. Student users are responsible for selecting from among the topics, researching them in the library, and completing the paper. The program is being developed on a DOS-based microcomputer using Arity Prolog. A prototype of a larger system that will be developed to cover many topics in German literature, this smaller program covers the eighteenth-century German literature read in Miami University's GER 401. The program will become part of a computerized writing aid now being completed at Miami University.

PRESENTERS' BIODATA

Ruth H. Sanders, Professor of German at Miami University of Ohio, has worked on a number of projects for German-language CAI, including SPION, an AI adventure game, and SYNCHECK, a comprehensive parser of German now being implemented as a writing aid for intermediate and advanced college students.

Mary Kathryn Cassidy, M.A. candidate in German at Miami University of Ohio, is working on a master's thesis which uses computational techniques to analyze aspects of the Pfeffer Spoken Corpus of German. This is her first project in German CAI.

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THE USE OF STUDENT MODELLING IN AN ITS

ROBERTA SINYOR

ABSTRACT

One of the major objectives of an ITS is to customize its operation to the individual student/user's needs as much as possible, including providing feedback much as a real private tutor would. The ITS performs this task using explicit information provided by the student (e.g. course level, first language in the case of an L2 learner) as well as information obtained by continuously tracking the student's use of the system. An ITS with parsing capabilities (such as I am developing for Italian) is uniquely suited to customization in this way because it incorporates grammars that are both correct and incorrect thereby allowing student errors to be pinpointed. This tracking of the student's responses can be carried out automatically and unobtrusively. Once collected, this information can be used for ongoing modification of the program sequence to meet the student's needs.

The tracking capability is also a useful tool for the teacher: the same data tells the teacher where students are having difficulties, thereby allowing him/her to adjust lesson content to maximize his/her effectiveness as well.

The tracking module is articulated in three major segments: the first contains personal information identifying the student and course in which she or he is enrolled; the second provides an on-screen status report to the student at the beginning and end of a session; the third performs the actual tracking.

PRESENTER'S BIODATA

Roberta Sinyor, an Associate Professor of Italian at York University (Toronto, Canada), is co-editor of CCALLNET (The Canadian CALL Network), a newsletter on CALL at the post-secondary level and an executive member of CanShareCALL, a recently-formed consortium on CALL in Canada. She co-edited *CALL: Papers and Reports* (Athelstan, 1990) and has published articles on CALL. She is currently developing an Intelligent Tutoring System for L2 learners of Italian. Besides a general interest in AI techniques applied to CALL, she is interested in student modelling and integrating voice and other multimedia aspects into CALL programs.

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TOWARDS INTEGRATION: ASSESSMENT OF MULTI-MEDIA IN THE FOREIGN LANGUAGE DEPARTMENT AT VENTURA COLLEGE

ALICE SLATON

INTRODUCTION

Thanks to IBM and the Language Learning and Multimedia Applications (LLAMA) consortium, Ventura College started the process of integration and assessment in the Fall of '92. Ventura College was selected as one of ten affiliate sites to use and evaluate language applications developed by seven major institutions. Four IBM PS/2 multimedia stations were granted. One IBM PS/2 multimedia computer station is located in the classroom to be used by the French, Spanish and German instructors as a presentation station, the three other stations are located in the language lab to be used by the students of French, Spanish, and German. The purpose of this presentation/paper is to describe:

1. Ventura College's first steps towards integrating interactive multimedia materials in French, Spanish and German: The LLAMA project and what each faculty member was able to do in the Fall '92 semester to teach and learn.

2. The French project *Fantastique!*, the video pre and post-tests with *Fantastique!* and share some of the preliminary results.

3. Evaluations and needs from faculty and students.

BACKGROUND

Although I have been involved in interactive multimedia since 1984, have published *Interactions Audio-Visuelles* and *Flash Télévisé* videodiscs, have often brought an interactive multimedia station into the classroom, none of the foreign language students at Ventura College had had access to interactive materials until the Fall semester 1992.

Students have access to multimedia

My dream came true when Ventura College became an affiliate member of the LLAMA consortium. The Foreign Language department at Ventura College was granted four IBM multimedia stations loaded with many applications all working under Microsoft Windows, including Asymmetric's ToolBook and IBM's AAcS 2.1.

I. FIRST STEPS

The process of integration and assessment is a complex one requiring restructuring, redesigning the teaching and learning environment for the teacher and the learner. In other words, it requires rethinking the content and constant questioning of the how and the why in that new environment. Three Ventura College FL faculty have just begun!

Workshop at Smith College June 1992: Dave McCarley, Patty Rush and myself attended a Toolbook workshop at Smith College. That worshop taught by Dr. Willem Pet from the Institute of Academic technology (IAT) at the University of North Carolina at Chapel Hill, was an excellent starting point in our journey.

Getting Ready

The Summer of 92 was spent learning and discovering the tremendous capabilities of our IBM Stations and software. The objective was to get the stations ready for students' use for the Fall semester '92. On 18th of August 1992, we gave a workshop on Toolbook and language learning for our staff development activities. For projections in the classroom we bought TVLink from Modern. TVLink is a black box that allows us to project the IBM VGA computer screen (including video motion) onto our TV using the S-VHS in. We equipped the three stations in the Language Lab with a mixer/switcher to be able to access the three audio sources (videodiscs, CD's/CD-ROM's and wave audio from recorded digital audio).

Two videodiscs were immediately available from the developing institutions in the LLAMA consortium: The PICS' *Trilingual* videodisc from the University of Iowa and *Vi-Conte* from the University of Calgary also distributed by PICS; the computer software to accompany the discs was under development. Ventura College bought four *Trilingual* Videodiscs and three *Vi-Conte*. In addition, the French department had the videodisc *Interactions Audio-Visuelles*, with the manual and Hypercard interactive modules (which needs to be reprogrammed to Toolbook), *Flash Télévisé* and its barcoded manual.

The *Trilingual* videodisc

We selected the *Trilingual* disc as our first step toward integration because it was affordable, and offered a good variety of video segments in the three languages: six segments in French, six in Spanish and six in German.

The German program

The classroom station enabled Mr McCarley to use the computer as an electronic blackboard. He used Microsoft Word for his presentations, accessing as many as five open documents and tables instantaneously. The advantages of this environment versus the blackboard are evident: He is able to use 28 and 30 point character size for the screen to be visible, clear and legible to all students; Mr. McCarley organized the material in a consistent format which made more effective for his students.

The Spanish program

The students of Spanish were provided an orientation session in the classroom as to the use of the station and the *Trilingual* PICS disc. In the lab. self-paced listening and paper-based questions and evaluations were provided (see form.)

The French program

Three classes of French were scheduled in the presentation classroom, one was not: the students in FRl, FR2, FR3 were exposed to the videodisc material, the other section of FR1 was assigned to videotape work, *French in Action*. Additionally, a random selection from the four classes was given a VHS tape of *Fantastique! to* view and practice at home for a period of twenty days. Additionally, Studio 203, under the direction of Mr. McCartney pre-tested and post-tested my students of French, on video using *Fantastique!* video content. Our objective was to measure proficiency and acquisition.

Orientation and class work were provided and the students were able to reinforce the class presentation of the clips in the lab, where self-paced listening, reading and audio practice were possible. At the end of each self-paced session the student completed an evaluation (see form). Throughout the semester the students were tested on the material covered in each class.

II. DESCRIPTION OF FANTASTIQUE PROTOTYPE

The Fantastique prototype is a 30-minute videotape with two sound tracks for level 1 videodisc. It includes an Audio/visual poem on learning, 6 two minute segments of authentic speech from French TV broadcasts on subjects concerning programs in France to improve reading, a program to address the problems of environmental pollution, a clip about designer Pierre Cardin, etc. Instructional segments reinforce the instructional objective of being able to comprehend and describe the authentic segments (what they see and what they hear) including the authentic speech after sufficient practice on related subtasks.

Each authentic video sequence is preceded by a video lesson illustrating a language concept and vocabulary, followed by a practice section to apply the concept and the vocabulary introduced. Many basic first and second year language concepts were introduced as well as general vocabulary and vocabulary contained in the content of the authentic clips. These lessons include concepts such as: Qu'est-ce que c'est? Qui est ce? Il y a un/il y a une/il y a des; c'est une/c'est une/ce sont des; ce n'est pas un/ce n'est pas une/ce ne sont pas des; il n' y a pas de (d'); Qu'est-ce qu'ils font? etc.

The second sound track features:

1. An introduction to French women artists and their works: Elizabeth Vigée Le Brun, Rosa Bonheur, etc.
2. Testing to assess students' language acquisition and proficiency.
3. Selected sentences and summary selected from the authentic footage.
4. Synched description and commentary on the visual aspect of the clip.
5. Audio feedbacks for the students to facilitate lesson interactive design and student active participation.
6. Audio comprehension questions on each clip.
7. Video clip on selected animals, their sounds and corresponding verbs, used in a sentence.

Pedagogy of *Fantastique!*

Special attention was given to ensure that the student is given the opportunity to listen actively, view and understand, then say and practice with the correct answer and feedback. As such as possible the active listening is supported with visuals. The student has the opportunity to actively participate when the timer prompt is seen on the screen. The active participation of the student occurs by answering a question or by completing a statement. Then the audio answer is given to the question or the statement, finally the student can see and read the answer. Two basic premises provided the theoretical basis for the instructional design. The first is that language is acquired as learners make successive approximations toward a correct module. The other premise is that students learn what they practice. If the terminal behavior desired is that of oral production of language, then instruction must include practice on tasks that help replicate desired outcomes.

III. PRELIMINARY ANALYSIS OF VIDEO TEST

Field-tests of the prototype of Fantastique have been made. More than 64 students from four classes (two sections of French 1, one class of French 2 and one class of French 3) were pre-tested the third week of the semester in September. Following the test, their names were placed in a paper bag and 18 names from FR1 and seven from FR2 and seven from FR3 were randomly selected as the treatment group, i.e. the Fantastique prototype. The other students served as control subjects for comparisons between the two groups. The seven-minute pre- and post- test was presented on videotape. The visual content was selected from the instructional and authentic content of *Fantastique!* The test included questions such as: C'est quel numéro? Qu'est ce que c'est? Qui est-ce? Complétez la phrase suivante and Qu'est-ce qu'ils font? Some of the objectives of the test were: listening comprehension, general comprehension of authentic speech, responding to basic questions in French, and simple description in French of what the student has heard, comprehended and seen.

The treatment group viewed part one of *Fantastique!* for ten days. They viewed part two for ten days. We drew from a population of 80 a random selection of about 32 students from 4 classes for the treatment group. We learned more about testing and the test itself. We have to give clear examples to cue the student to understand the prompt.

Student spoken responses were videotaped. Preliminary comparative analysis has been made by group and by individual pre- and post-test performance. The analysis based on videotaping students' spoken responses indicates significant post-test gains for the treatment group. Gains include a significantly greater number of correct responses as well as more detailed and elaborated responses than the control subjects. Moreover, the students receiving the treatment were more at ease and more willing to guess and risk making errors in responding to the videotaped test.

In conclusion, more multimedia instruction is needed. It works. The post-test showed that the students learned best what they practiced the most. We also found that the video practice appeared to reinforce and facilitate the student performance on other class tests.

Following are quotes from students who were in the treatment group and have used the tape *Fantastique!*

> *"If the tape were on a disc it would be easier and better."*
>
> *"I like the way the video was set up."*
>
> *"You get a better understanding when seeing pictures that go with the sound."*
>
> *"I learned more about the French culture."*
>
> *"I enjoyed the scenes on the streets of Paris and France."*
>
> *"The sound on the tape was not very good."*
>
> *"I would appreciate a longer pause between the question and answer."*

Following are quotes from students who have used the IBM multimedia stations with the *Trilingual* disc and software for listening oral practice:

> *"I like the way this is shown, especially because it is easy to use and they (the clips) aren't so long so you enjoy watching it and also you get used to the sound."*
>
> *"It's interesting to recognize some words that I just learned in class. I feel more excited to know more."*
>
> *"I like the idea of using audiovisual techniques for learning languages and the time to come is very flexible; it is a definite plus."*
>
> *"I like the video, because it gives you the opportunity to hear French as it is spoken in France."*
>
> *"This is a great learning project. I have difficulty listening to tapes but this is a lot more help than anything."*

Quotes from the faculty:

> *"This is my first experience with multimedia. I'm delighted by the opportunity and found the seminar at Smith College to be positive. However, I do not have the talent nor the expertise to develop the programs. I need 'finished' products containing on-screen text, longer videodisc programs, exercises and glossary included, cultural references available etc."*

> *"Staff development is needed across the curriculum. At our August in-service, many faculty came from other disciplines and other schools. There is great interest, but people wish to see usable, affordable, finished products in specific subject areas. There are fewer faculty interested in the development than in utilizing a professional well designed product."*

In conclusion, the introduction of interactive multi-media has brought authentic language to the foreign language student at Ventura College. Interactive multimedia has also challenged us, the faculty, to question and re-evaluate our traditional course content and teaching strategies and has offered us the opportunity to explore, begin to implement in a new environment, new teaching techniques and technologies in the curriculum. We plan on continuing the video pre- and post-test of the students of French, be able to improve on the test itself and gather better information to help the teacher design better instruction. We have just begun.

PRESENTER'S BIODATA

Alice Slaton, Ph.D. professor of French at Ventura College, has been a designer, producer, presenter, author of multimedia language materials since 1984. She is the Coordinator of the LLAMA consortium project and the producer of several videodiscs: *Interactions Audio-Visuelles, Flash Télévisé, Fantastique!,* she has designed a barcode manual for *Flash* to facilitate access and interactivity for the teacher.

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ADAPTIVE LANGUAGE PRACTICE IN A MULTIMEDIA SETTING

ROBERTA STOCK

ABSTRACT

With the emergence of technology that allows for the development of truly multimedia courseware, there is great hope that foreign language courseware will finally begin to present students with authentic and communicative types of language experiences. However, will this use of more experiential computer programs automatically make more controlled types of practice obsolete and unnecessary. When, for example, a geography program such as "Where in the World is Carmen San Diego" is used in ESOL classes, does that mean that structured practice is no longer appropriate? Or, since freedom of choice is a basic principle of multimedia programs, do we now encourage students to start anywhere and do anything?

We are, however, still teaching" language (at least at the lower levels) and at least some students require and request work on discrete items before making the leap to language use. The challenge, then, is to utilize this media to its utmost while still monitoring and controlling student progress.

I will show how adaptive evaluation can be successfully integrated into a multimedia language course while still preserving the integrity of the medium. My basic assumption is that while students can have freedom of choice, they are always being monitored and the data gathered will determine the difficulty level of their next selection. Thus, while there may be a large number of possible routes through a course, student always work on material determined by previous performance.

As an example of implementation of this approach, I will demonstrate a new multimedia ESOL product to be released Spring 1993.

PRESENTER'S BIODATA

Roberta Stock, Ph.D. is a member of the Division of Foreign Languages at Tel Aviv University and Director of Educational Technology at Edusoft Ltd. Israel where she is the project manager of a large scale ESOL project together with Berlitz. In the early 70's, while Roberta Stock was a graduate student in Linguistics at the U. of Illinois, she became involved in the PLATO project, developing CAI courses in ESOL and Modern Hebrew (which are still being used today). In the past 20 years, she has been involved in many CAI and CBT development projects for both national (Israel) and international markets.

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HOW DOES A COMPUTER-MEDIATED NEGOTIATION SIMULATION FUNCTION IN AN ESP CLASSROOM?

MAIJA TAMMELIN

OVERVIEW

Since its creation twelve years ago, Project Icons has provided an opportunity for students to join a global classroom without having them leave their own classrooms. First developed for students of international studies, ICONS today can be integrated into the curriculum as a program that gives scope for practicing a host of various skills, including negotiation strategies, decision-making and language skills, and for gaining a deeper understanding of the complexity of international issues. Its main purpose is to widen students' perspectives and make them aware of what it is like to negotiate with different countries, each representing a different culture.

The project, which originally only included universities in the U.S., is now worldwide and operates on four levels: university simulation, high school simulation, the Maryland Initiative in International Education summer school, and business simulations. In the university simulation almost half the teams are non-US based.

A participating team is usually assigned 3 or 4 topics agreed upon by the faculty involved and the administrative staff for the project at the University of Maryland. The topics deal with current political or economic issues. For instance, the fall 1992 university simulation topics included the following:

European Community
Global Environment
International Trade (GATT - international trade talks)
International Debt
Arms Control
Human Rights
Drug Trafficking and Production
World Health Issues

The Finnish team participated in the negotiations concerning the Global Environment, GATT and Human Rights.

The participating team also has to decide whether it is going to be using languages other than English. Many of the participants in the U.S. integrate a foreign language component into the ICONS exercise by setting up a team of translators to translate all the incoming and outgoing messages under the guidance of a native teacher of the foreign language; in the past, ICONS simulations have been conducted using Spanish, French, Russian, Hebrew, Japanese and German as well as English. Since English already was a foreign language to our team, the foreign language element was already there. We also came to realize that even if we had integrated yet another language into the exercise, the Finnish business students would most likely not be satisfied with being in the translating team: they would want to be decision-makers, no matter what language was used.

IMPLEMENTATION

Preparation

The ICONS project starts with a six-week preparation phase during which the course facilitator initiates the students into the project and the topics on which the team will be negotiating. At the start of the term, the University of Maryland sends a scenario to the participating teams describing the world situation, especially as regards the topics to be discussed. The students study the scenario and, depending on the size of the class, are then grouped into teams with special focus areas and tasks.

The Finnish team participating in the fall 92 simulation consisted of 15 students the Helsinki School of Economics. The group was divided into three teams, each responsible for one particular topic. Each team did research on its particular topic and prepared a position paper which outlined the issue from Finland's point of view and the strategies and recommendations that the team was going to pursue during the negotiations. A couple of weeks prior to the real time conferences, the country teams started exchanging communiques on the topics to give the other teams some idea of how the other countries stood on the issues. The students also started practicing how to make the connection with the POLNET system at the University of Maryland.

Simulation

The simulation phase lasts about five weeks, and it is during this phase that the real time conferences take place. A schedule for the pre-established conferences is set up by the Simulation Controller (SIMCON). It is also possible for the country teams to try to set up an extra conference on a topic of special interest if there are enough teams interested in participating. The country team wanting to set up such a conference has to take an active role in instigating the issue by applying to SIMCON and persuading other teams to participate.

Each negotiation has two rounds at about two-week intervals. The time in between is used for reclarifying positions, revising strategies, and formulating new policies. The teams exchange communiques sent to all participants or may try to develop a bargaining strategy that involves making a deal with one particular country team.

The real time conferences last for about an hour. During the conference some 150 - 200 comments are exchanged.

Debriefing

At least one or two weeks should be reserved for debriefing, a phase which is of critical importance for the overall exercise. During this stage, faculty and students have an opportunity to reflect on their experiences. At this point, the students should come to realize that even though they gained a lot of factual information during the exercise, it is actually the insight into the process itself that was the most important thing gained from the experience. Since an agreement or a closure on any particular issue or problem is rarely reached at the end of the simulation, it is important to make the students understand that the purpose of the simulation is not to resolve all issues, but rather to gain an understanding of the complexities and difficulties involved in negotiations between countries representing radically different world views.

ASSESSMENT OF THE PROJECT

The ICONS projects that I have experienced as a facilitator have all been characterized by the students' high level of motivation and commitment. It seems that because it is so much faster to communicate via computer-based telecommunications, momentum and interest can be more readily maintained (Steinberg 1992). Judith Torney-Purta, an evaluator of several Icons high school projects in the U.S., writes that the computer screen was an object of highly focused student attention because it was constantly changing and providing valued information in a way that the blackboard usually does not; such attention appears to enhance the individual's processing of information (Torney-Purta 1991, p. 39).

David Crookall, an ICONS pioneer, comments that because of the realistic nature of the negotiations that take place in simulations like ICONS, students quickly develop a wide range of language skills. He also comments that during the project the teams often experience that the simulation develops a reality of its own (Crookall & Oxford 1990, p. 15). Because the students experience the simulation so realistically, their need to use a foreign language for meaningful communication is also real.

From an ESP teacher's point of view it seems that the real time conferences give an excellent opportunity to improve the skill of fast communication. Although the communicative language proficiency of the Finnish ICONS participants has been high, the ability to react fast linguistically is not usually one of the strengths of the Finnish students.

In addition to learning new terminology and practicing the use of negotiation strategies, the project has given the Finnish students an excellent chance to increase their awareness of various linguistic registers. Although the messages sent are in the written form, the students discuss and formulate them together before sending them. They are often faced with a situation where they may consider some other team½s message stupid. How to respond diplomatically may not be quite simple, but the students have to try to make their decision together. The facilitator tries not to interfere. The messages sent during and in between the conferences can be saved and a hard copy can be printed for later study and evaluation.

All messages sent by the students on the system are constantly monitored by the simulation controllers at Maryland, who send instant feedback if they catch messages that do not meet the agreed criteria. This kind of monitoring is also done in the real time negotiations: SIMCON reacts immediately if any team gets out of line. SIMCON also sends feedback on the teams' performance and the general level of the negotiations held, and on how they could be improved. The use of control like this is a very valuable feature in ICONS, and certainly raises the level of the students' performance by making them take the exercise very seriously.

At the end of the project the students have been asked to give both written and oral evaluations.

Examples of student evaluations:

Student 1: I felt like a professional among professionals with something important to do and to establish. This course gave me the feeling that what I am learning and I have already learnt can actually be used for something useful in the real world and that is a feeling that is not so often felt in our school. In short, this course was more real in its simulation than many other courses in their theoretical aspects.

Student 2: Languagewise I think I gained most from the course in the form of special vocabulary - environmental and technical - that I was not very familiar with before. The course also successfully combined the spoken and written elements of a language in a meaningful way: language not only as an end in itself, but as a means to accomplish something else... What made everyone do their best to contribute to the project was probably the fact that we were actually connected to students from all around the world and naturally wanted to - as is characteristic of Finns - make a good impression on everyone as representatives of our country. Also, to a lesser extent, there was an obligation to the group itself.

CONCLUSION

As telecommunications technology becomes available to more and more schools around the world, having access to global classrooms enables language teachers to use an effective new tool in improving their students' communication skills in a foreign language. Electronic communication and network gaming, e.g. the use of simulations such as ICONS, provide a stimulating resource in language learning in the 1990's, which can be used to prepare students who will be working in the field of international business and industry to meet the growing demands on their foreign language communication skills.

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PRESENTER'S BIODATA

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SOFTWARE FOR BEGINNING LANGUAGE TEXTS: IS ANY DATA LURKING OUT THERE AND IS GETTING IT WORTH THE EFFORT?

FINLEY M. TAYLOR

INTRODUCTION

Many publishers of introductory foreign language textbooks offer ancillary computer programs to their users. Their goal is clearly to make their language packages more attractive and thus increase sales. This presentation examines some of these programs to determine whether they can be used as a learning tool which may replace ordinary written homework. We will review some common features of language software: ease of character production, types of exercises and algorithms used, and feedback. We will also discuss whether or not the exercises can be modified, whether or not scores are kept and reported, and whether and how the students can be tested using the software.

Our department got its start with CAI around 1989 when Norton began supplying CALIS exercises with the text German: A Structural Approach. We had no computers in the language department but copying the diskettes for students was only a minor inconvenience. Soon I asked to have the software installed on our university LAN, giving access to all our students. A records-keeping version of CALIS followed, furnishing reports to our instructors. German homework had been transferred to the computer. Software for the other languages followed: the French had The French TroubleShooter for the text Rapports; the Spanish had MACAIS for ¡Ya Comprendo!; and the Italians had RHELT software for Italiano in Diretta. And the instructors of these languages wanted reports, like the German. What follows is the result of our struggle to understand and use the various software packages and use the exercises, sometimes, for purposes other than the intended ones.

SCORING, RECORDS, TESTING: A NOTE ON PHILOSOPHY

The extant software reflects interests and methodologies of publisher, book or exercise author and software developer. We must understand these interests to influence them. Publishers pay to develop and/or maintain software because they want to sell books. Clearly they will not purchase expensive software, unless they see that it will influence potential customers. If we develop criteria and voice our desires, publishers will respond.

The important role of the developer's philosophy and approach is illustrated by HyperGlot software. Company president Martin Rice prefers a user-friendly graphical interface with strong visual and audio reinforcement. He believes that the attractive promise of computer-aided instruction lies in the fact that the computer can be made to present a tireless and totally non-judgmental teacher-friend. Students should be able to work privately without worrying about making errors. There are plenty of other ways, Martin feels, for the teacher to test, evaluate, judge, and grade; HyperGlot's software will not.

Some software keeps a score only for the student's information, without recording it for later retrieval, whereas other software keeps records, but in sometimes cumbersome fashion. Software is only partially effective when there are too many vague or undefined factors in the learning equation, such as where the learning takes place, whether and what kind of reports the teacher gets, and whether the exercises prepare the student for classroom activities or tests. A key element in all this is the teacher. Instructors who do not take the time to become acquainted with the software and integrate the computer program into classroom activities and tests will not profit from even the best designed software.

At the University of Central Florida we have a language media facility with a strong emphasis on teaching. Teachers and students work together on selected audio and computer exercises. And we are developing ways to measure change in these activities and provide rewards. Our experience leads me to these observations. To be useful, the software must be text-specific. It should reflect and reinforce the teaching and testing methodology; that is, the student who spends time drilling at the computer should be tested in an identical or almost identical way. Software must be available to all students, and all must be expected to use it. The software must evaluate and supply periodic and meaningful reports to the instructor, who must be able to modify exercises and create tests. Some available software packages can do these tasks; others could be easily modified to do so.

FOREIGN LANGUAGE SOFTWARE ACCOMPANYING BEGINNING TEXTS

Among the developers and distributors of ancillary software today are the following. McGraw Hill uses MAGLT and MHELT 2 by developer by John Underwood, who also authored RHELT (Random House Electronic Language Tutor) for such texts as Italiano in Diretta. John Brooking developed Houghton Mifflin's Computer Study Modules [En Contacto, Découverte et Création, and En Avant!]. Jay Bodine's The TroubleShooter, now The TroubleShooter II, accompanies D. C. Heath texts such as Rapports, Neue Horizonte, Como se dice?, and A Foundation Course in Spanish. Macmillan's MACAI Learning Support Software was acquired by Prentice Hall, who will continue with a modified version for their own textbooks. Duke University's CALIS (Computer Assisted Language Instruction System) accompanies Norton's GERMAN: A Structural Approach. HyperGlot (Martin Rice) is working on software for D. C. Heath. And Sue Otto and James Pusak's Dasher drills are offered with Houghton Mifflin's Deutsch heute.

The RHELT software for Italiano in Diretta has grammar drills on a relatively unattractive green-on-black screen, generic instructions and some unusual ways of producing foreign language characters. Editing, entering answers and skipping ahead are cumbersome and confusing. Scoring is for the students's benefit only and takes getting used to. The data files are, I believe, encoded and cannot be changed. Nevertheless, our students found it useful, certainly better than no software at all.

I recently talked to Dr. John Underwood about changes in the MHELT 2 exercises for McGraw Hill's Kontakte and have examined a preliminary copy for the MAC. Dr. Underwood says that the software now keeps score, and that the student can print either an exercise-by exercise score or an overall score for any particular session. I was only able to print the former, but at least this is some confirmation that the exercises have been done. There was no color in the MAC version I inspected; forming foreign language characters was simple. I found the constant need to move and click the mouse a bother.

Houghton Mifflin's Computer Study Modules (John Brooking) make more use of color than RHELT and are more appealing. They, too, make no use of sound and there is little interaction with the student. Help screens are generic but user friendly. The creation of foreign language characters is simple and easy to remember. Additional help screens with verb conjugations, vocabulary items or possible responses are provided for certain exercises. Other nice features are available; for instance, one can mark a particular question for recycling. The computer doesn't correct students' mistakes. When a student completes an answer, pressing ENTER causes the correct answer to appear, and the student can compare the two. There is no score or other data generated. The exercise files do not lend themselves to modification for variety or testing.

The French TroubleShooter for Rapports offers a black and white screen and would benefit from a more apparent explanation of how foreign characters are made. The student is asked to produce words or sentences; the answer is compared to one or more correct answers and resubmitted, minus incorrect letters, for the student's correction. It does keep score, but does not record that score for later retrieval. The ASCII text files can easily be changed to create new exercises or tests. Our teachers and students appreciate the software.

Jay Bodine sent me an examination copy of The TroubleShooter II with exercises for Neue Horizonte. The exercises are in color, and the software keeps records of students's names, exercises and scores. Student comments for the teacher are stored in a separate file. I am not sure how the reporting procedure is meant to work, but the score file is ASCII text and can be easily edited with a word processor. The TroubleShooter II as the first version, allows editing of existing exercises, creation of new ones or of tests.

We know Macmillan's-now Prentice Hall's-MACAI as it accompanies ¡Ya Comprendo!. It is an attractive program with varied activities including flashcards, reading comprehension exercises, and fill-in-the-blank. An easy explanation of how foreign characters produced is always on screen. Our students like the program. The exercises are encoded and cannot be varied; testing would seem to be limited to simple replication. MACAI keeps records of student activities, but, as I discuss later, we have never been able to get it to work satisfactorily on the LAN.

Duke's CALIS is an authoring system and, if one cares to learn it, can be used to script various exercises for many languages. The exercises accompanying Norton's GERMAN: A Structural Approach are extremely useful because of their completeness and the fact that they can be corrected and varied. The screens are attractive and character production is simple. We use it for testing. It does have a records keeping LAN version; additionally a new Windows' version is available or soon will be.

HyperGlot offers a variety of language software programs for drill and learning, including the Berlitz Think and Talk series. They are developing new software to accompany the upcoming version of Heath's Rapports. There are Dasher exercises for Deutsch heute. Dasher is an authoring language, but I am basically unfamiliar with it. The Deutsch heute drills are attractive and easy to use. It does keep records of students's scores and can be run on a LAN.

Reports

Getting reports from the software is still a relatively time-consuming, if not impossible, affair. Most of the packages do not provide for them; however, this does not mean that no report at all is possible. Our LAN people supply each instructor with weekly reports for each class. These LAN reports display the students' User ID, the hours the student has been logged-on since the last report and the total number of hours the students has been logged-on during the semester. These reports say nothing about which exercises the student attempted, whether he/she successfully completed them or even if the student worked on an assignment. Consequently, most of our instructors consider the reports meaningless. I don't agree, at least totally, since the process of going to a computer lab and logging-in is so time-consuming that uninterested students don't bother. We also know that students logged-in to the foreign language file server can use only software requested by the instructor; the students cannot, therefore, use the language accounts to work on assignments for other courses.

Our French instructors discovered that they could verify students's completion of assignments by asking for a print screen of the score. While the screen-print shows only the score, the student ID appears on the "banner," a default first page accompanying LAN prints at our university. There are a number of problems with this method of reporting. Banners are attached to the score only on continuously-fed dot-matrix printers; the value of print screens done on laser printers is questionable at best. The procedure also wastes paper. As a consequence, it was decided to restrict the number of exercises on which scores are required. Print screens over networks frequently cause the computers to lock-up and require rebooting. Students also complain about having to wait long periods for the print outs. In the meantime, one of the computer labs has been equipped with a continuously-fed dot matrix printer beside every computer and screen-prints no longer present a problem there; assigned homework with reports continues as before.

MACAI

Macmillan-since purchased by Prentice Hall-supplied software which records the following information as each student completes a session at the computer: student I.D. and name; chapters, sections, activities and modes; scores for each activity; time spent at the computer; and date. The software developer's intent was that each teacher must gather data files from individual student diskettes for comprehensive reports.

We run the program on the network; scores are stored in one large encoded file. Using the supplied utilities, we were unable after repeated attempts to generate reports. We are finally producing them, using a combination of MACAIS software and a program which we wrote.

CALIS

The basic CALIS version does not keep records, but a records keeping, networkable version can easily be obtained. When a student logs in, the records-keeping version of CALIS begins creating certain files, one of which records the student's score for each exercise completed. To discourage cheating, these files are given randomly generated names. Periodically, they are compiled into larger, permanent student records. And from these class reports can be generated. These reports contain an alphabetical listing of students with the highest attained score for all completed exercises. Each student's report occupies about ½ page. The exercises are taken directly from the textbook and homework can be done entirely on the computer. Exercises may be repeated until any desired grade is attained, and, since only the highest score is reported, students need have no fear that later repetitions, such as review for tests, will reflect badly on their grade.

Other Data

Of all the packages available, to my knowledge, CALIS is the only one which attempts to record students' responses. Besides the scores files mentioned above, CALIS keeps a file for each student containing all responses during each session. These files can be compiled into files containing every correct and incorrect response to each question of every exercise.

The individual files can be examined for information into the students' learning or working procedures. The following example shows how a student worked to get correct answers and then repeated the exercise, obviously profiting by the experience. The students were instructed to construct sentences from the elements supplied.

```
1:-:Ich verstehe Sie nicht, ich bin denn Ausländerin
1:-:Ich verstehe Sie nicht, denn bin ich Ausländerin
1:-:<GIVEUP>
2: +:Bitte, wie komme ich zum Bahnhof?
3: +:Wir bleiben zwölf Tage in Deutschland
4: +:Warum läufst du denn so schnell?
5:-:Heute abend nimmt er nicht sein Wagen.
5:-:Heute abend nimmt er sein Wagen nicht.
5: +:Heute abend nimmt er seinen Wagen nicht.
6:-:Morgen scheint hoffentlich die Sonne.
6: +:Hoffentlich scheint morgen die Sonne.
7: +:Ich weiß, wer er ist, aber ich kenne ihn nicht
8: +:Heute gehen wir nicht schwimmen, denn das Wetter ist
    schlecht.
```

In an immediate repetition, the student correctly answered every question on the first attempt.

On the other hand, these sentences taken from the last part of a construct-from-elements exercise and the beginning of a translation exercise, show that this student is really guessing and unfortunately probably only wasting time.

```
3:-:Der Sonna ist scholn
3:-:Der sonne scholn
3:-:Die sonne scholn
3:-:Die Sonne scholn.
3:-:Die Sonne schiet
3:-:Die Sonne scheit
3:-:Die Sonne scheinet
3: +:Die Sonne scheint

2:-:Wir gehen aus eine München
2:-:Wir gehen aus nach München
2:-:Wir gehen aus nach München
2:-:Wir gehen aus nacht München
2:-:Wir gehen aus nacht München
2:-:Wir gehen aus nach München
2:-:<GIVEUP>
```

Although the student's perseverance is admirable, it would probably be better to give up on every answer after only one or two tries, and then attempt the exercise again.

As we examine students' answers, we gain remarkable insights into the students' working procedures. We see whether they are really learning or simply guessing. Whereas some students use a Give-Up feature to cheat, getting the answer cheaply to satisfy a homework requirement, others exploit the computer's natural capabilities, having learned that it is better to do a drill several times quickly than to complete it once in a slow and laborious fashion.

We also use CALIS for testing. Using data gathering procedures, we have counted and listed all right and wrong answers. This data then is used to analyze the testing instrument. When, as happens, a high percentage of students miss a question, and, of these, a high number choose the same answer, we know we have worded the question incorrectly or we have failed in the classroom to make the point sufficiently clear.

These data can be used for fundamental research supporting or refuting language acquisition theory and practice. We can gain valuable empirical evidence on when linguistic concepts should be introduced, how and how long they should be drilled and how often they must be recalled.

CONCLUSION

In some cases we found that our attempts to force homework reports from software not designed for that purpose caused undue problems for our computer services department; in others the services of a programmer were required to generate reports. In short, we find that the expectations created by these software packages often do not live up to their reality. We must continue to stress that both student and teacher know the software and that meaningful reports and data be supplied them both in order to utilize effectively the computer's potential. In order to get those features we find valuable, we must make our needs known to the publishers and developers. We need homework reports and modifiable ASCII text files. Looking forward, we will want to make use of the computer's ability to store, sort and analyze student responses, and we should encourage developers to move in this direction, awaiting the day when we can supply immediate data analysis to the foreign language instructor.

PRESENTER'S BIODATA

Finley M. Taylor is Director of the Language Media Center at the University of Central Florida in Orlando. A Professor of German, he has been following the development of CAI since the late 1970's. He co-ordinates all software programs of the Department of Foreign Languages at UCF.

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LANGUAGE TRAINING IN PARLOUS TIMES

EMERY W. TETRAULT AND RENÉE MEYER

We are living in an era of dramatic change, a phenomenon reflected in countless updates of world atlases. In response, language training throughout the United States Government has begun to reorganize and retool in a hitherto unprecedented fashion in order to train language specialists in new languages, many of which are among the least commonly taught in this country or anywhere else. Such languages tend to be poorly documented with scarce and incomplete references and teaching materials. Existing training is weak, because there is no teaching tradition, no extensive community of researchers, teachers and practitioners, and few resources in terms of computerized databases, courseware, and even usable language fonts. This paper will consider the daunting challenge that faces all of us in both the Federal and the private sectors and outline some of the factors that might contribute to orderly solutions in this time of relative chaos.

STUDENTS

Most of our cross-trainees are ILR level 3 (ACTFL Superior) in at least one foreign language. While some will be asked to study languages that are cognate to one they already know, others will tackle languages that are genetically and typologically different. In either case, our students are seasoned language learners and users, not blank slates.

COGNATE LANGUAGES

If two languages share a common ancestor that is not too far removed in the family tree, then they are like cousins with many similarities and bridgeable differences. Any adult student undertaking the study of a language that is cognate to a language that he or she already knows begins with latent proficiency in the new language and can achieve working proficiency in reading and listening quite quickly. For example, people who already know Turkish have a major head start in Azeri.

NON-COGNATE LANGUAGES

In real life, people often end up studying languages that are not related to anything they know. They are still good prospects for training because they have a lot of experience, content knowledge, and an array of metalinguistic skills. In the Federal Government, Russian language specialists cross-training into Kazakh, for example, meet these criteria. They begin their training with useful content domains and with a large stock of Russian borrowings in Kazakh, because Kazakhstan was under Russian hegemony for a long time, and many of its economic, social and governmental structures continue to reflect this fact.

METHODOLOGICAL CONSIDERATIONS

Whether we are talking about commonly rather than uncommonly taught languages or beginning rather than continuation training, the use of real discourse in the adult-centered language classroom provides a connection with reality and a wealth of redundancy that is all too often missing from the materials found in language textbooks. Foreign language educators at Federal schools are increasingly turning to "found texts" that are representative of the culture and the natural use of the language, and we operate on a "top down" basis that promotes text processing before word processing.

D.L. Fisher and M.S. Smith include decoding, partial processing or predicting future items in a string, and encoding items and entering them into short-term memory as word processing skills. They distinguish between these skills and what they call text processing, which consists of relating prior knowledge and experience to the text at hand, perceiving both the explicit and implicit relationships between sentences in a connected discourse, and systematically integrating the information contained in such a discourse.

Our emphasis on text processing enables our learners to focus first on what they already may know about a foreign language text from their own world experiences. Through a discovery sequence that encourages them to find and dig in their schema "hooks" before attempting any overall comprehension activity we build a guessing comfort zone, which accelerates acquisition, initiates text processing and facilitates the transition into word processing, in the sense that they are able to perform decoding operations with a much greater sense of context.

There has been much discussion about the need for simultaneous top-down and bottom-up teaching and processing in the foreign-language classroom. The ratio of text-processing or top-down to word-processing or bottom-up clearly depends upon the learning styles of the students, the teaching styles of the instructors, and the similarities of the new language to the students' native or second language. We suggest, however that the general approach in any course at any level should aim at text processing, because this more closely simulates what effective language users do in real life.

CROSS-TRAINING - STAGE ONE

As we have stated above, an experienced language specialist who is taking on a new language that is a close cognate to one he or she already knows starts with latent proficiency in the new language. The goal for the first stage of instruction for this kind of student is to convert latent proficiency into working proficiency: ILR 2 (ACTFL Advanced) in at least reading and listening. The conversion process should be designed to exploit a sizable transfer grammar that already exists between a known second language (L2) and a third language (L3) that is a close cognate. A modest knowledge of L3 phonology plays a crucial role at this stage. It allows students to discover and use systematic transfer rules governing the L2 < > L3 reflexes of the same underlying form, a process that draws heavily on a method that has long been a mainstay of historical linguistics. This approach is a key to the exploitation of both cognate and borrowed vocabulary in the new language, and for this reason we advocate the use of taped back-up with all texts. Intensive work with real text in the L3 enables students to transfer cognate forms and acquire completely new lexical items in an order that reflects true frequency of usage. Vigilance against false friends is stressed at all times. Another feature of L3 programs for people who already know a cognate L2 is the opportunity to apply contrastive analysis to the study of the morphological and syntactic systems of the L3.

With languages that are not cognate to either a learner's first or second language, the goals of this first stage of instruction in a less commonly taught language are considerably more difficult to attain. At the present time, students often begin studying their new language at a proprietary language school and usually emerge from this training with an ILR 1+/2 (ACTFL Intermediate-High/Advanced) in reading and listening. After considerably more training time in the first stage, their proficiency is similar, but somewhat more fragile than that of the person who has used L2 knowledge to gain access to a cognate L3.

CONTINUATION TRAINING - STAGE TWO

Student input for stage two comes from two different sources - the graduates of what we might call "cognate-transfer" programs as well as those who have completed basic courses in non-cognate languages. Input proficiency is ILR 1+/2, at least in reading and listening. The earliest units of this second stage will be aimed at consolidating, systematizing and activating what the learners already know. However, even before performing formal needs assessments, we can be reasonably certain that our cross-training students will need level-three proficiency, because much of what they see or hear is in the evaluative mode (requiring ILR-3/ACTFL Superior).

MODALITIES AND MEDIA

The fact that students have to begin training at widely varying times and need to proceed at their own pace drives the argument for some form of computer delivery in less commonly taught languages is. However, the implications of developing a full-blown multimedia instructional system in Kurdish, for example, are overwhelming, to say the least.

EPSS

A third alternative worth investigating is a modified electronic performance support system like one developed in the mid 1980's by Automated Language Processing (ALP) Systems and adapted for instructional purposes. Using this system, students use PC's to type their translations and receive hard-copy feedback in the form of a correct translation. They are able to access three levels of software support: an Automated Dictionary Lookup, a Selective Dictionary Lookup and a Multi-Lingual Word Processor. One of the innovative features of the courseware used in this program is a series of pre-translating exercises with on-line feedback. Electronic performance support systems incorporating the features of this ALP MAT system can eventually be used at both stages of a curriculum for a less-commonly taught language - stage one rapid survey courses for people with a good command of a cognate language as well as much of the instruction in stage two.

DESIDERATA

Historically, linguists have been presented with new technology and asked to find appropriate problems for it to solve. For once, however, we are in the position of asking technology for answers, some of which we may already have, at least in part. The trick is to get all the answers to work together. We need to collect an appropriate corpus of "found" text, both graphic and phonic and digitize it in such a way that it will be usable at future junctures in the language analysis and course development process. One of the minimum standards of usability is the degree to which the corpus can be manipulated. Then we have to feed the manipulable output of a scanning operation into a language analysis system and derive the kinds of useful information that distributional sorts can provide. The output of the analysis operation has to connect with a context-sensitive lexical database that will work in concert with the kinds of software that support a variety of language learning activities in the same way that ALP Systems AutoTerm supports pre-translation and translation activities in intermediate translation courses. Fonts must be displayed and printed during all stages of development and use, and they must be coded consistently throughout the process without the Rube Goldberg expedient of conversion software.

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Renée Meyer, (M.A. The George Washington University) is currently managing a major Department of Defense language training effort.

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ASSESSING HYPERTEXT FOR LANGUAGES FOR SPECIFIC PURPOSES

THOMAS THIBEAULT

ABSTRACT

Students of Language for Specific Purposes (LSP) often find a considerable gap between the language proficiency acquired in four semesters of traditional coursework and the level of proficiency required to understand specialized reading materials. The problem has become more pronounced in recent years with the growth of LSP in the areas of business, engineering, law, etc. This is due to the fact that non-instructional reading materials (articles, reports, charts, etc.) contain a large amount of specialized terminology and are generally written at a more sophisticated linguistic level for native speakers.

Hypertext allows a non-linear, context-sensitive approach to dealing with specialized reading materials. Students can interrupt the reading flow at any time to access needed help features, such as translations of specialized terminology, explanations of unfamiliar concepts or grammatical analysis of a given sentence.

This presentation will focus on empirical research dealing with hypertext for LSP and will highlight a study carried out in the area of business German by the presenter. The study was supported by a Peat Marwick grant from the Association of American Colleges and the American Assembly of Collegiate Schools of Business. Several universities throughout the United States participated in the study. Both affective and cognitive evaluations were carried out to determine the effectiveness of hypertext as a means for bridging the proficiency gap in business German. The presentation will include a detailed description of the study as well as a demonstration of the hypertext readers.

PRESENTER'S BIODATA

Thomas F. Thibeault received his Ph.D. at the Universität Salzburg in computer-assisted language learning. He is director of the Language Media Center and Asst. Prof. of German at Southern Illinois University. His areas of specialization are in-house courseware development, interactive audio/video and hypertext. Dr. Thibeault regularly offers workshops on CALL courseware development and has given several presentations on related topics at professional conferences. He is Chair of CALICO's Courseware Development SIG. He is currently developing hypertext readers for business German with grants from the AACSB/AAC and the US Dept. of Education.

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ATLAS: AN EXAMPLE OF CALT IN A BILINGUAL SITUATION

ILSE VAN ACHTER

By order of the Civil Service Commission of Belgium, Didascalia[1] is developing an adaptive system for evaluating second language proficiency, called ATLAS. ATLAS is a testing battery consisting of six modules and focuses mainly on the grammatical and textual skills of the testee.

In order to give a detailed description of someone's proficiency, ATLAS requires a large number of items that reflect the richness of the language. Therefore we developed a new system for calculating the item difficulty degree that is compatible with an extensive database. This system is based on the linguistic characteristics of the items and on a statistical analysis of the examinees' answers as well.

To conclude this paper I will assess our two years' experience with the ATLAS system.

SITUATION

The Didascalia research team at Antwerp University has been investigating computer assisted adaptive language testing for three years in the DIPCAN project. This fundamental research for the Flemish Ministery of Education has lead to a project for the Belgian Civil Service Commission that has to test about 15.000 persons a year. Due to the bilingual situation in Belgium, civil servants working in Brussels have to prove their proficiency of the second language, either Dutch or French. Didascalia was asked to computerize these exams in order to make them faster, preciser and more objective. This so-called ATLAS project offered us the possibility to implement the results of DIPCAN in a real adaptive language proficiency test. At the moment three modules (vocabulary, prepositions, grammar) are finished and implemented at the headquarters of the Civil Service Commission for a trial period.

A COMPUTERIZED LANGUAGE PROFICIENCY TEST

We have chosen the computer as test medium: it can be used to guarantee accurate, objective and reliable evaluation. The contents have to be formatted, i.e. structured in order to be usable by the computer.

According to Bachman's model[1] *language competence* can be considered to have the following structure:
-*organizational competence*: grammatical, textual
-*pragmatic competence*: illocutionary, sociolinguistic

From grammatical to sociolinguistic competence, linguistic rules and contents become less explicit and cannot be formatted so easily. Therefore, our strategy is based on a bottom-up approach. ATLAS is conceived as a testing battery and focuses mainly on the grammatical and textual competence in six modules.

THE ATLAS BATTERY

An Adaptive Test

We have chosen an adaptive testing method to test about 15.000 persons a year *efficiently*:

- the test has to proceed rather quickly (as well for doing the test as for correcting it). An adaptive test eliminates irrelevant questions, which are time-consuming, by searching the candidate's level.

- civil servants form a very heterogeneous group: an adaptive system tailors the test to the level and function of the candidate. ATLAS provides 100 proficiency levels and contains specific terminology of certain professions (such as law terminology, police and medical vocabulary).

- last but not least, the test has to be safe, i.e. the test items may not be passed on from one person to another. It follows that the test should provide sufficient items for each level.

The third criterion implicates a large database. The consequence however is that the ATLAS system could not be developed using current adaptive testing models based on Item Response Theory. These models are only feasible with a restricted item bank. Therefore we developed a new system.

The ATLAS System

Essentially, an adaptive test adapts the difficulty of the test to the level of the testee which presupposes *(a)* the principle of item difficulty degree and *(b)* the determination of the proficiency level of the testee. They form the conditions which underlie an adaptive model.

The initial degree of each item is determined as follows: each item is coded according to its linguistic features. These features are to be considered as the parameters of the difficulty degree calculating process. During calibration, a certain value is assigned to each code within each parameter. In the ponderation those values of an item are added up in order to calculate its difficulty degree. In this stage the value of each parameter is reduced according to its contribution to the global degree of difficulty.

Test items are classified on a scale from 1 to 100. This scale also functions as a proficiency scale on which the testees are located. Our model is probabilistic and it is based on Information Theory. At the beginning of a test each level has a probability of 0.01. The information required at that moment (= the uncertainty about the testee's level) can be calculated as $\log_2(100)$. The objective of the test is to increase the probability of one level considerably in order to reduce the uncertainty. The result of the test gives an indication of the highest probability and of the remaining uncertainty.

ATLAS is a flexible system. During the test we registered the answers and errors made by the candidates. The initial difficulty degree of the items is continuously readjusted trough the statistical analysis of the errors.

ASSESSMENT OF ATLAS

Measuring language proficiency is a very complex matter. Second language proficiency is not developed in a uniform way, but depends on variables such as the employed didactic method and schoolbooks, personal experience and interests. ATLAS tailors the test to the level of each candidate and enables him to prove what he knows (independent of any curriculum). This is due to the richness of the database (8000 items of vocabulary) and the accurate selection of the items: different semantic fields, word classes and frequencies are scanned.

During the past two years we were also confronted with some problems. A correct ranging of the items on the difficulty scale is a 'condition sine qua non' for the reliability of the system. During the past trial period we did not bring together sufficient statistical material to readjust all the wrongly calibrated items. The exhaustive databases do not facilitate this task.

The ATLAS score provides in the first place quantitative knowledge about the language proficiency of the testee: it indicates in terms of probability how much he knows within a certain module, *e.g.* vocabulary. From the score one cannot exactly determine which concrete words the testee knows. Therefore the score cannot be linked to actual contents.

The ATLAS system in itself is an efficient tool to test the numerous and heterogeneous group of civil servants. But applied to linguistic contents, it has to face some problems concerning the test validity and reliability. We are aware of the fact that we have to solve these problems in order to guarantee objective, valid and reliable testing.

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NOTE

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FROM AND ADAPTIVE TEST TO A PREDICTIVE TEST

MARJOLEIN VAN BODEGOM

ABSTRACT

The EuroTest system will be described; it is an adaptive testing system. Basically it is a big matrix of questions. The students are taken through this matrix depending on correct or incorrect responses to questions. It results in report for teachers.

The ambitious step we have taken is to start the development of a EuroCoach system. This EuroCoach system needs a more sophisticated and detailed input than people do. The new test is therefore based on psychometrics, to be more precise on intuitive psychometrics also known as isometrics.

At the end of this presentation I will discuss the performance differences between the EuroTest and the first part of the EuroCoach system, as we have experienced them.

PRESENTER'S BIODATA

Dr. Marjolein van Bodegom Studied cognitive science, did her thesis on Intelligent Tutoring Systems. She works at Eurolinguist Residential Language-institute, a language school where CALL represents up to 50% of the curriculum.

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USING THE WINCALIS AUTHORING SYSTEM TO DEVELOP PROGRAMS FOR GERMAN

DONNA C. VAN HANDLE

COURSEWARE DEMONSTRATION

This demonstration will look at the specifics of teaching German language/Landeskunde classes using several interactive video programs created with the WinCALIS authoring system and using a videodisc produced inhouse. I also plan to speak about the advantages of using such multimedia applications in teaching will also be discussed. In addition, concerns such as hardware costs and availability/adaptability of software will be addressed.

PRESENTER'S BIODATA

Donna C. Van Handle is a Lecturer in German, Mount Holyoke College, South Hadley, Massachusetts. Research interests include: Contemporary German and Austrian "Landeskunde" and literature, second language acquisition, CALL and multimedia applications in FL teaching.

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This Is Your Captain Speaking: Multilingual Computer Assisted Cockpit Crew Announcement Training

Ann Van Walle

DESCRIPTION OF THE PROJECT

Importance of the program

Within the scope of a Total Quality program, Sabena (Belgian Airlines) wants to *enhance customer satisfaction* by improving each form of direct contact with the client. Basically, Sabena personnel gets into contact with the client in five kinds of interaction:

- Cockpit Crew Announcements
- Cabin Crew Announcements
- Cabin Crew Dialogues
- Ground Crew Announcements
- Ground Crew Dialogues

For each of these forms of multilingual interaction, a special training program is to be developed.

Multilingual Cockpit Crew Announcements are very important as they offer a unique opportunity to *show concern* about:

- Safety and security
- Punctuality
- Comfort
- Information

Such announcements however are *not easy to make*, due to the specificity of the communicative situation.

Specificity of the communicative situation

- Sabena pilots do have a high language proficiency in various languages, but this language proficiency is not always adapted to communication with the passengers. Messages often remain too technical. A second problem is that pilots have a high workload, and that making announcements should not interfere with safety priorities.

- The transmission of the message is disturbed by a lot of noise: the engines, passengers talking, ... As this communication is only *one way audio*, and as there are no visual references, the message may be hard to understand. Passengers cannot ask questions directly to the captain, but they have to address the cabin crew.

- Time and workload permitting, pilots may translate their announcements themselves. If this is not the case, pilots should take into account that cabin crew members may have to make the translation. Cabin crew also have to deal with questions of the passengers if there is some uncertainty.

- Passengers want relevant and precise information. They want to hear a clear and understandable announcement. Frequent flyers want to hear a personal touch and some variation. Some passengers have a rather poor knowledge of one of the three languages used by Sabena pilots (English, Dutch, French).

- The image of the company, especially in case of difficulties, should always be taken care of.

Criteria for high-quality announcements

In order to deal with the above mentioned specificity of the communicative situation, Cockpit Crew Announcements should meet the following criteria:

- As far as language is concerned, pilots should apply simple vocabulary and structures, a varied and personal style and a positive approach.

- Using redundant structures (explaining something again in other words) increases comprehensibility of the announcement, especially when there is a lot of noise.

- Announcements should be structured according to the *expectancy pattern* of the passenger. When the captain starts speaking, there are two possibilities for the passengers: there is some good news or there is some bad news. This can be made clear in two ways: in an explicit way (I'm happy to inform you ..., I'm sorry to tell you ...) or in an implicit way (by putting e.g(the reason first). In case of bad news, passengers want to know what the problem is. Basically, there are several possibilities: there may be a delay problem, bad weather or a safety problem. It is very important that passengers immediately know what the actual problem is and that they do not create false or exaggerated expectancy patterns Afterwards, passengers want more information about cause and consequence of the problem and about what the company is going to do about it.

- As far as the *content* of the announcements is concerned, primary concern is towards the right structuring of above mentioned information moments. A complete announcement contains the following elements:

a polite initial formula

good news	bad news
flight information	nature of the problem
	cause
	consequence
	efforts of the company

a polite final formula

Announcements should always express concern about safety, punctuality, comfort and information.

This is your captain speaking: the software program

Sabena has developed this announcement training program in collaboration with the research team Didascalia of Antwerp University. The program contains 93 announcements, subdivided in 8 texts in 3 languages (English, Dutch, French). Each announcement represents a specific flight situation (such as in-flight, descent, arrival...).

The objective of this program is *not to train standard texts*, but to train pilots in formulating *personal and efficient* announcements.

That is why the program is geared towards two basic aspects:
- acquisition of relevant linguistic structures in order to allow pilots to formulate announcements in an almost automatic way.
- acquisition of the ability to adapt announcements to various situations.

The program contains more than 5,000 references to explanatory remarks on word level, sentence level and content level. At each level, the possibilities of variation are explained in detail:
- on word level, the program offers synonyms.
- on sentence level, the program presents other possible structures or ways of expressing, e.g.:
  - apologies
  - requests
  - thanks
  - situation and movement
  - expressions of time
  - specific syntactical problems
- on text level, the program takes into account other possible situations, e.g.:
  - weather types
  - geographical elements: countries, cities, rivers, visual references, mountains
  - expressions of time
  - expressions of quantity
  - ...

Implementation in the Sabena training curriculum

This is your captain speaking is not perfect yet. Thanks to remarks from Sabena pilots however, Didascalia will be able to improve it continuously. At the moment the program is being implemented in the Sabena training curriculum, and a strategy for announcement quality assessment is being worked out.

Demonstration of the software program

A detailed demonstration of *This is your captain speaking* illustrates how to work with the program and how the menu-system is conceived. It gives an idea of the variety of announcements, the large amount of information cards and the different exercises and tests that can be made.

PRESENTER'S BIODATA

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JOHN-PAUL VOJTISEK AND TOBIAS SCHINE

COURSEWARE DEMONSTATION

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PRESENTERS' BIODATA

John-Paul Vojtisek is a ninth grader from Middlebury, Vermont. His school courses include second year Latin and computer programming using Pascal. He uses HyperCard and plays tennis during leisure time.

Tobias Schine, an eighth grader from Middlebury, Vermont, enjoys sports and has programmed in Pascal and HyperCard for three years. He is taking first year Latin and fluently speaks German.

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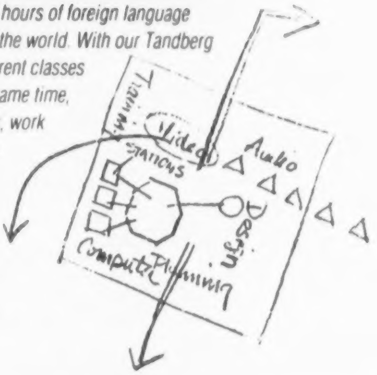

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